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ABSTRACT

The Armed Services Vocational Aptitude Battery, Form 14 (ASVAB-14) is a multiple aptitude test battery designed for use for civilian, as well as military, career counseling. This manual is designed for use by school guidance counselors in administration and interpretation of results of the ASVAB-14. The 1984 revision of this instrument includes improved utility in measuring vocational aptitude, increased reliability, and nationally representative norms. The ten subtests are described and may be combined to yield academic or occupational composites. The manual provides information on test administration procedures, technical characteristics, score interpretation, and report forms. Appendices include a history of the ASVAB, sample test items, descriptive statistics, "The ASVAB and the Military," and "The Military Career Guide." Seven sample handouts for examinees are also apppended. (DWH)

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COUNSELOR'S MANUAL

COUNSELOR'S MANUAL
FOR THE
ARMED SERVICES VOCATIONAL
APTITUDE BATTERY
FORM 14

JULY 1984

DoD 1304.12X

Dear Counselor:

The introduction of the *Armed Services Vocational Aptitude Battery Form 14* (ASVAB-14) during the 1984-85 school year offers counselors a resource for career counseling and necessitates further learning about this new battery and its applications. The American Association for Counseling and Development (AACD) is pleased to assist the approximately 14,000 schools that administer the ASVAB annually by preparing the *Counselor's Manual for the ASVAB Form 14.*

Presently, schools are faced with increasing expectations and declining financial resources. If students are to receive quality career counseling services at a reasonable cost, the ASVAB should be considered as a component of the school testing program.

Many counselors have been able to use ASVAB results with students to increase self-understanding, to encourage career exploration, and to improve decision making. Others have yet to become familiar with the possibilities that exist. This new manual has information to offer counselors with prior involvement in ASVAB testing and those who have not been involved in the past.

It is hoped that you, as a school counselor, will actively participate in the ASVAB testing process in your school. Because of your familiarity with students and training in test interpretation, you can integrate ASVAB results with other important student information.

AACD believes this manual will help counselors maximize the utility of ASVAB-14 in their career guidance and counseling programs.

Sincerely,

Patrick J. McDonough

Patrick J. McDonough
Executive Director
American Association
for Counseling and Development

Alexandria, Virginia
July, 1984

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The *Armed Services Vocational Aptitude Battery* (ASVAB) was first offered to schools by the Department of Defense in 1966. Since that time, it has become an integral component of many schools' testing programs and today, over 1.3 million students in approximately 14,000 schools take the ASVAB annually.

The widespread use of the ASVAB has resulted in suggestions regarding how the test might be made even more useful to schools. As a result, the Department of Defense has conducted ongoing, extensive research for the purpose of improving the test and is pleased to be providing schools with the latest version - *ASVAB Form 14*. The *Counselor's Manual for the ASVAB Form 14* was developed to assist counselors in understanding and using this improved version of the test.

The *Counselor's Manual for the ASVAB Form 14* was developed as a result of the efforts of many individuals. In particular, we wish to thank the American Association for Counseling and Development (AACD) for preparing the manual. The insight of the many AACD representatives on this project regarding the type of information most needed by counselors has been invaluable.

Representatives of several AACD divisions comprised the project advisory committee. Members of this group included Dr. Joe Johnston, University of Missouri-Columbia, Association for Counselor Education and Supervision; Ms. Marjorie Mastie, Washtenaw Intermediate School District, Ann Arbor, MI, National Vocational Guidance Association; Dr. Donald Rosen, Iowa State University, Ames, Association for Measurement and Evaluation in Counseling and Development; and Mr. Jim Stiles, Hill Academic and Vocational Center, Lansing, MI, American School Counselor Association. These individuals provided valuable input to the project by generating ideas and reviewing drafts of the manual. Their assistance as advisors on this project is greatly appreciated.

Many others have contributed to this document. The Joint-Service Selection and Classification Working Group sponsored the project, closely read revisions, and obtained the necessary cooperation and approval from each of the Services. The working group consisted of Major William J. Strickland, Headquarters, U.S. Air Force (Chairman); Dr. Malcolm J. Ree, Air Force Human Resources Laboratory; Mr. Louis A. Ruberton, Headquarters, Department of the Army; Dr. Clessen J. Martin, Army Research Institute for the Behavioral and Social Sciences; Mr. Charles R. Hoshaw, Office of the Chief of Naval Operations; Mr. Leonard Swanson, Navy Personnel Research and Development Center; Major Larry J. Jurica, Headquarters, U.S. Marine Corps; Dr. Milton H. Maier, Center for Naval Analyses; Lt. Colonel Joseph Mazziotta and Dr. Clarence McCormick, Headquarters, U.S. Military Entrance Processing Command; Dr. Robert Frey, Headquarters, U.S. Coast Guard; and Dr. Anita R. Lancaster, Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics).

(continued)

FOREWORD

Policy oversight for the entire ASVAB program is provided by a Joint-Service steering group. Members of the group, representing the Department of Defense and the Military Services, include Dr. W. S. Sellman, Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics); Major General B. B. Porter, Headquarters, Department of the Army; Rear Admiral A. J. Herberger, Office of the Chief of Naval Operations; Major General R. C. Oaks, Headquarters, U.S. Air Force; Brigadier General J. M. Mead, Headquarters, U.S. Marine Corps; and Brigadier General W. L. Vaught, U.S. Military Entrance Processing Command.

The contributions of the AACD staff who worked on this project also are gratefully acknowledged. The project director was Ms. Jill Garnett. Dr. Mary E. McCormac was the technical writer. Ms. Kathleen White was the research specialist, and Ms. Fran Gregerson and Ms. Carolyn Price were the project secretaries.

Finally, special recognition is due to Mr. John J. Mathews, Air Force Human Resources Laboratory. He served as the Contracting Officer's Representative throughout this project. His technical expertise aided immeasurably to the success of this manual.

Lawrence J. Korb
Assistant Secretary of Defense
(Manpower, Installations and Logistics)

Multiple aptitude batteries have long been regarded as a fundamental component of a comprehensive counseling program. Results from these batteries help students assess their aptitudes and predict performance in academic and occupational areas, select career exploration activities, and make tentative career choices. The *Armed Services Vocational Aptitude Battery* (ASVAB), the most widely used multiple aptitude battery in the United States, provides measures of aptitudes for general academic areas and for career areas that encompass most of the civilian and military world of work.

1

INTRODUCTION TO ASVAB-14

Purposes

The ASVAB is a multiple aptitude battery designed for use with students in Grades 11 and 12 and in postsecondary schools. The test was developed to yield results that are useful to both schools and the military. Schools use ASVAB test results to provide educational and career counseling for students. The military services use the results to identify students who potentially qualify for entry into the military and for assignment to military occupational training programs.

Like other multiple aptitude batteries, the ASVAB measures developed abilities and predicts what a person could accomplish with training or further education. This test is designed especially to measure potential for occupations that require formal courses of instruction or on-the-job training. In addition, it provides measures of general learning ability that are useful for predicting performance in academic areas.

The ASVAB can be used for both military and civilian career counseling. Scores from this test are valid predictors of success in training programs for enlisted military occupations. Through the use of validity generalization techniques, predictions from military validity studies can be generalized to occupations that span most of the civilian occupational spectrum. Although some enlisted occupations are military specific, more than 80% of these occupations have direct civilian occupational counterparts.

Since the ASVAB was first used in high schools in 1968, it has been the subject of extensive research and has been updated periodically. Appendix A contains a brief history of the ASVAB and the various forms that have been used.

Key Features

ASVAB-14, introduced in the 1984-85 school year, contains several key features that were not included in previous forms. These key features include

- **improved usefulness in measuring vocational aptitudes:** In addition to yielding *academic composites* that provide measures of academic potential, ASVAB-14 supplies *occupational composites* that provide measures of potential for successful performance in four general career areas.
- **increased reliability:** Changes in the length and number of subtests have increased the test's reliability without a substantial increase in testing time.
- **nationally representative norms:** ASVAB-14 is normed on a nationally representative sample of 12,000 women and men, ages 16-23, who took the test in 1980.

Content

Subtests

The ASVAB consists of 10 subtests. Eight are power subtests that allow maximum performance with generous time limits. Two subtests are speeded.

Figure 1-1 presents the subtests, the time allowed for the administration of each subtest, the number of items per subtest, and the descriptions of the abilities or knowledge measured. The subtests are designed to measure general cognitive abilities and acquired information in specific areas. Sample questions for each subtest are provided in Appendix B.

GENERAL SCIENCE

11 Minutes

25 Items

Description

Measures knowledge of the physical and biological sciences.

ARITHMETIC REASONING

36 Minutes

30 Items

Description

Measures ability to solve arithmetic word problems.

Figure 1-1.
ASVAB-14
CONTENT.

Testing Time	144 minutes
Administrative Time	36 minutes
Total Testing Time	180 minutes
Total Number of Items	334

WORD KNOWLEDGE

11 Minutes

35 Items

Description

Measures ability to select the correct meaning of words presented in context and to identify the best synonym for a given word.

PARAGRAPH COMPREHENSION

13 Minutes

15 Items

Description

Measures ability to obtain information from written passages.

NUMERICAL OPERATIONS

3 Minutes

50 Items

Description

Measures ability to perform arithmetic computations in a speeded context.

CODING SPEED

7 Minutes

84 Items

Description

Measures ability to use a key in assigning code numbers to words in a speeded context.

AUTO & SHOP INFORMATION

11 Minutes

25 Items

Description

Measures knowledge of automobiles, tools, and shop terminology and practices.

MATHEMATICS KNOWLEDGE

24 Minutes

25 Items

Description

Measures knowledge of high school mathematics principles.

MECHANICAL COMPREHENSION

19 Minutes

25 Items

Description

Measures knowledge of mechanical and physical principles and ability to visualize how illustrated objects work.

ELECTRONICS INFORMATION

9 Minutes

20 Items

Description

Measures knowledge of electricity and electronics.

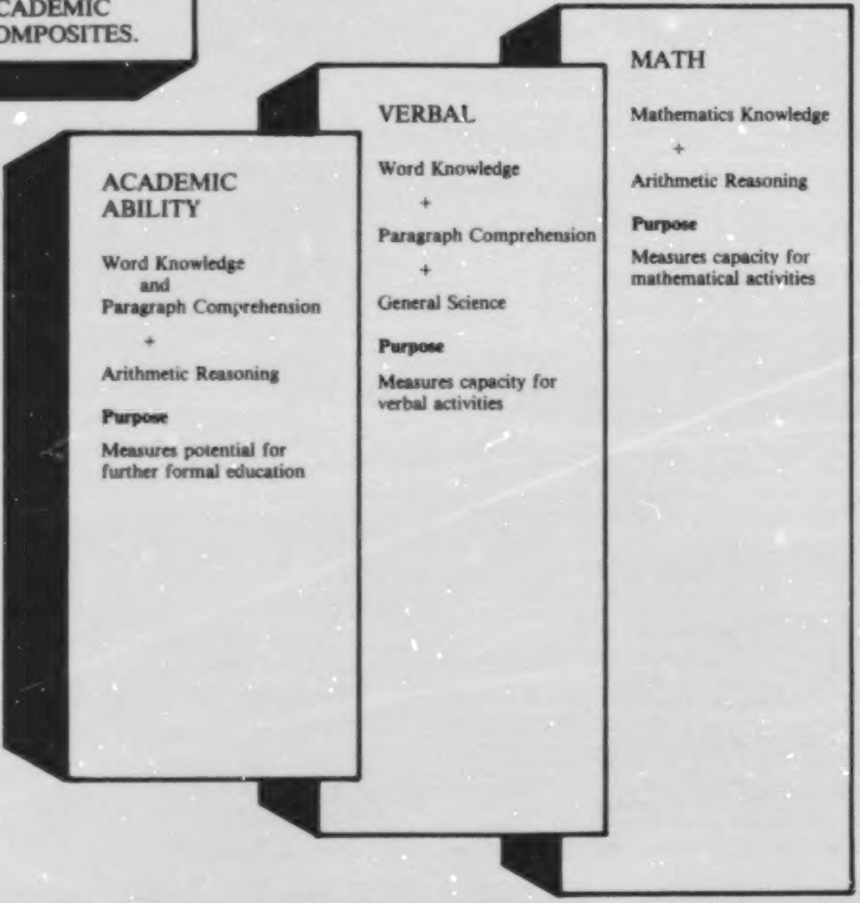
Composites

ASVAB results are reported by composite scores. Composite scores are combinations of subtest scores that have demonstrated validity for predicting performance in academic and career areas.

ASVAB-14 yields *academic* and *occupational composite* scores:

1. The *academic composites* measure a student's potential for further formal education and predict performance in general areas requiring verbal and mathematical skills. The three *academic composites* are presented in Figure 1-2.
2. The *occupational composites* measure a student's potential for performance in four general career areas. The *occupational composites* are presented in Figure 1-3, along with the subtests that comprise them and examples of civilian counterparts of military occupations that are associated with each composite.

Figure 1-2.
ACADEMIC
COMPOSITES.



ACADEMIC ABILITY

Word Knowledge
and
Paragraph Comprehension
+
Arithmetic Reasoning

Purpose

Measures potential for further formal education

VERBAL

Word Knowledge
+
Paragraph Comprehension
+
General Science

Purpose

Measures capacity for verbal activities

MATH

Mathematics Knowledge
+
Arithmetic Reasoning

Purpose

Measures capacity for mathematical activities

Figure 1-3.
OCCUPATIONAL COMPOSITES.

MECHANICAL & CRAFTS

Arithmetic Reasoning
+
Mechanical Comprehension
+
Auto & Shop Information
+
Electronics Information

Sample Occupational Grouping

Machinist
Auto Mechanic
Diesel Mechanic
Sheet Metal Worker
Carpenter

BUSINESS & CLERICAL

Word Knowledge
and
Paragraph Comprehension
+
Mathematics Knowledge
+
Coding Speed

Sample Occupational Grouping

Clerk Typist
Personnel Clerk
Transportation Agent
Data Entry Operator
Paralegal Assistant

ELECTRONICS & ELECTRICAL

Arithmetic Reasoning
+
Mathematics Knowledge
+
Electronics Information
+
General Science

Sample Occupational Grouping

TV and Radio Repairer
Automatic Equipment Technician
Instrument Mechanic
Line Installer-Repairer
Auto Electrician

HEALTH, SOCIAL, & TECHNOLOGY

Word Knowledge
and
Paragraph Comprehension
+
Arithmetic Reasoning
+
Mechanical Comprehension

Sample Occupational Grouping

Medical Service Technician
Cook
Police Officer
Dental Assistant
Flight Operation Specialist

(*Numerical Operations* is not found in any of these composites; it is used only by the military.)

BEST COPY

The ASVAB and Counseling

Counselors and other educators can use ASVAB results to help students plan future educational and career activities. These results, which help students assess their aptitudes, explore appropriate career areas, and formulate educational and career plans, are useful at various stages of career development.

Assessing Aptitudes

ASVAB results enable students to assess their abilities to succeed in further formal education and in four general career areas. For students who are only beginning to consider different careers, and for students who remain undecided about future careers, a careful examination of their ASVAB scores can increase self-understanding and establish a realistic foundation for future career choices.

Exploring Careers

Career exploration is a process that usually takes place throughout most of a young person's school years. ASVAB results, when combined with achievements, interests, values, and biographical data, can be used to select appropriate areas for career exploration.

Career Decision Making

Helping students make intelligent and well-informed career decisions is a major goal of any educational and career counseling program. The availability of aptitude information is critical in that decision-making process. Students may use ASVAB results to make initial career decisions and to choose among specific occupational training options. For students considering military careers, ASVAB testing in the 11th, 12th, and postsecondary grades enables them to identify the types of military training programs for which they may be qualified.

In summary, ASVAB results can help students with different needs at various stages in the career development process. The ASVAB, therefore, should be considered an effective component of a comprehensive schoolwide testing program.

The ASVAB testing process is a cooperative venture. Although the military services are responsible for the actual administration of the test battery, counselor participation is important to help students make optimal use of test results. This joint effort results in responsibilities for both the counselor and the military throughout the testing process: before testing, at the time of testing, and after testing. Some of these responsibilities are specific to the counselor or to the military services, whereas some overlap. Throughout the process, teamwork is essential.

2

TESTING PROCEDURES

Planning for Testing

Counselors should consider a number of questions as they plan for ASVAB testing and determine how the ASVAB will most benefit students. Major questions are presented below. A response to each implies that a number of other decisions have been made. When a counselor can answer these questions, the ASVAB testing plan is well on its way.

Before Testing

- How will the school use the ASVAB results?
- What activities will be conducted to inform students and others about ASVAB testing?
- Who will take the ASVAB?
- What resources (e.g., printed materials, personnel) are needed from the military services to conduct these activities?
- When will the test be administered?
- How much time will be needed to administer the test?
- Where will students take the test?
- Who will serve as proctors?
- What recruiter contact option is appropriate for the students to be tested?
- Who else in the school or school district needs to be informed of the ASVAB testing plans?

After Testing

- Who (students, parents, and/or faculty) will receive feedback on the ASVAB testing?
- What type of feedback will be provided?
- What assistance will be provided to help students understand their scores?
- What counseling will be provided using the ASVAB results?
- What career exploration activities will be planned based on the results of the ASVAB and other tests given in the school?
- What assistance, in the form of materials or resource people, is desired from the military after testing?

The sections that follow provide information that should help counselors answer these questions and prepare for testing. The suggested responsibilities of counselors and military personnel are summarized for the periods before, during, and after testing. In addition, relevant issues are discussed. Details on the roles of specific military institutions and resource people in the ASVAB testing process are presented in Appendix C. This information, along with the assistance of a military service representative, should provide the counselor with useful guidelines for planning.

Scheduling the Test

Summary of Activities

Before testing, **counselors**

- decide how they will use the ASVAB results with students;
- identify students to be tested;
- plan and schedule testing in conjunction with the military service representative;
- inform students of the scheduled test;
- inform parents of the scheduled test;
- arrange for school staff to serve as proctors, as feasible; and
- select the option for recruiter contact of their students.

Before testing, the **military service representatives**

- finalize the testing schedule in conjunction with counselors;
- provide ASVAB informational materials, as requested by counselors;
- participate in ASVAB awareness activities, as requested by counselors;
- confirm agreements on the recruiter contact option; and
- answer counselors' questions.

Considerations

School administrators and counselors first must decide how they will use the ASVAB results in their schools, because that decision will influence the testing plans that follow. ASVAB results can help students in the areas of aptitude assessment, career exploration, and tentative career decision making. Counselors should consider which students will benefit from the information that the ASVAB provides and should determine at what grade level this information will be most useful to these students.

Increasing ASVAB Awareness

In any voluntary testing situation, it is important to generate student interest by acquainting students with the purposes and uses of the test. Parents and faculty also should be informed. The following resources and activities might be helpful in increasing awareness of the ASVAB and its uses.

Resource materials. Materials are available to explain the ASVAB to students, parents, and faculty. These materials can be obtained from the local military service representative or by calling the United States Military Entrance Processing Command (USMEPCOM) toll-free at 1-800-323-0513. (In Illinois, counselors can call collect at 312-688-6908.) These materials, summarized in Table 2-1, can be distributed prior to testing.

Table 2-1
ASVAB Materials

FOR STUDENTS:	
Coming Attractions	A poster announcing the upcoming test.
Exploring Your Potential	A brochure providing general information about the ASVAB.
Your Career Starts Here: A Student's Guide to the ASVAB	A booklet providing an overview of the ASVAB, sample test items, and interpretive information. A question and answer section is included. Students should find the information provided in this booklet useful both before and after testing.
Sample ASVAB Results Sheet	An actual results sheet illustrating the results of a hypothetical student.
Military Career Guide: Employment and Training Opportunities in the Military	A book containing information on military enlisted occupational and training opportunities. It is designed to allow students to use their ASVAB results to explore military occupations.
FOR PARENTS:	
Time of Decision: A Parent's Guide to the ASVAB	A brochure summarizing the ASVAB, including a question and answer section.
FOR COUNSELORS AND OTHER EDUCATORS:	
ASVAB: A Brief Guide for Counselors and Educators	A booklet providing specific information on ASVAB-14: content, test scores, and technical information. A question and answer section is included.
Technical Supplement to the Counselor's Manual for ASVAB-14 (1984)	A manual describing both the psychometric properties of the ASVAB and supporting research.
ASVAB Reference Center	A three-ring loose-leaf binder that holds ASVAB publications.

Resource people. Representatives of the military services are available to speak at school functions such as assemblies, career nights, and PTA meetings. The local military service representative should be contacted for further details.

ASVAB awareness session. An awareness session, conducted with a group of students prior to testing, allows the counselor the opportunity to discuss general ASVAB information as well as school-specific considerations. The counselor might want to invite a representative of the military services to participate in the presentation. A counselor also might want to conduct similar sessions with parents and faculty. Appropriate discussion topics include the following:

- the value of aptitude testing, in general, and the use of the ASVAB in the information-gathering and career exploration processes;
- the school's intended uses of ASVAB results;
- the military services' uses of ASVAB results;
- the roles of the military and school personnel in the testing process;
- the school's selected option for recruiter contact of 11th and 12th graders (or postsecondary students);
- question and answer session; and
- additional announcements:
  1. Students must agree to sign the Privacy Act Statement (Figure 2-1) on the back of the answer sheet packet in order to receive their test results. Tenth graders will not be contacted by recruiters, but they must sign the statement in order to receive their test scores.

AUTHORITY: 10 USC 3012, 10 USC 5012, 10 USC 5013, 10 USC 8012

PRINCIPAL PURPOSE: For use by high schools for purposes of vocational/career counseling, curriculum planning and group assessment, and to assist in recruiting personnel for the armed services.

ROUTINE USE: For student vocational/career counseling, curriculum planning and group assessment; for preparation of service recruiting prospect cards and market analysis, research by DOD agencies and appropriate outside activities, recruiting and enlistment selection/qualification, and creation of computer listings for recruiting services. Collected data is retained for 2 additional school years. Any data retained past this time requires removal of name, social security number, street address, and telephone number from those records. Only data obtained from testing juniors, seniors, and post secondary students will be released to armed service recruiters.

DISCLOSURE: Student disclosure of social security number is voluntary. Student disclosure of test responses is also voluntary, however, failure to sign below acknowledging the intended uses and release of test scores will result in the test not being processed.

SIGNATURE ____________________

DATE ____________________

Figure 2-1. Privacy Act Statement.

2. A student's involvement with the test will not be used in any way for Selective Service registration.
3. An opportunity will be provided for students to discuss the results with a counselor when the results are returned to the school.

Arrangements for Testing

Scheduling. The counselor and the local military service representative should work together to schedule the testing session. The counselor should consider such things as the school's calendar, other testing that will occur during the school year, and activities that might compete for the students' attention.

Testing time. Administering the battery requires a 3-hour block of time. If large numbers of students are tested (100 or more), additional time may be required to collect the materials and to ensure that test security is maintained.

Room arrangements. The counselor arranges for testing facilities. Well-lighted, ventilated, comfortable rooms are needed. These rooms should be free from extraneous noise and interruptions. Each student should have a flat work surface that is large enough for the testing materials.

Proctors. In order to create a familiar atmosphere and enhance the performance of the students, counselors and school personnel are encouraged to serve as proctors. The military services also can provide proctors for the test.

Counselor codes. If students' results are distributed to different counselors, counselor codes can be used. In this case, the school must assign a two-digit counselor code to each counselor involved. On the day of testing, students must be informed of the counselor codes and they must enter the appropriate code on their answer sheets. When the ASVAB results are returned, the student results sheets will be grouped alphabetically, within grade, by counselor code. This code also can be used to group student results by other school-designated divisions, such as homeroom.

Options for recruiter contact. Counselors need time to distribute and interpret results to students before the student is contacted by the military about the test. Consequently, it is routine practice for students' scores to be withheld from the recruiting services for a minimum of 7 days after the scores are mailed to the school. School officials may wish to have additional time to discuss the results with students before there is any recruiter contact. Various options are available to the schools. Prior to testing, school officials inform the military service representative of their desired option.

Available options

1. No special instructions
2. No recruiter contact prior to 60 days after results are released to the school
3. No recruiter contact prior to 90 days after results are released to the school
4. No recruiter contact prior to 120 days after results are released to the school
5. No recruiter contact prior to the end of the school year
6. No telephone solicitations

7. Scores not valid for enlistment purposes
8. No recruiter contact from this listing of student results

These options apply only to recruiter contact efforts resulting from ASVAB-14 testing. Eleventh and 12th graders and postsecondary students may be contacted by military recruiters independent of the ASVAB testing. In addition, recruiting personnel encourage high school students to graduate before applying for enlistment into the military services. The recruiter must notify the school if a nongraduate tries to enlist.

Day of Testing

Summary of Activities

On the day of testing, **counselors**

- provide facilities for testing;
- provide proctors, as feasible; and
- introduce the test.

On the day of testing, **military service representatives**

- provide testing materials;
- provide a test administrator;
- provide proctors, as needed; and
- take student answer sheets for scoring.

Distributing the Results

Summary of Activities

After testing, **counselors**

- distribute test results to students;
- help students understand their results sheets;
- counsel students regarding their test results;
- encourage students to share their test results with parents;
- notify parents of high school students tested that testing occurred and that the results are available to the students;
- answer the questions of parents;
- assist students in obtaining relevant occupational and educational information from military recruiters and other sources; and
- place ASVAB results in students' school records.

After testing, **military service representatives**

- score student answer sheets;
- distribute test results to the school;
- provide controls for the distribution, access, and retention of ASVAB data on individual students;
- provide ASVAB resource materials, as requested by counselors; and
- provide technical support, as requested by counselors.

Considerations

Distribution to the School

ASVAB results. The Military Entrance Processing Stations (MEPS) process the student answer sheets locally. The results are returned to the school within 30 days.

Resources for interpretation. This manual contains information and resources for the counselor's use in helping students understand their ASVAB results. Resource people also are available to provide technical support to counselors in the interpretation of test results. The military service representative should be contacted for further details.

Access to Test Results

The military services established formal procedures to control the distribution, access, and retention of ASVAB data on individual students. ASVAB personal information and scores are recognized as the private information of the individual and are handled accordingly. Information on an individual's identity and related test information will not be released to any agency outside of the student's school system, the Department of Defense, and the Coast Guard. This information is retained by the military services for 2 school years. Test scores and demographic data required for research purposes may be kept by the military for a longer period. These data are used to support studies of the characteristics, reliability, and validity of the various forms of the ASVAB, and to support the development of improved versions of the battery. Personal identification information, however, is deleted from research records.

3

TECHNICAL CHARACTERISTICS

The technical qualities of a test are important to consider when selecting a test and interpreting its results. This chapter summarizes the technical characteristics of the ASVAB. The *Technical Supplement to the Counselor's Manual for ASVAB-14 (1984)* contains a complete description of the psychometric properties of the ASVAB and a review of relevant ASVAB research.

The Reference Population

ASVAB results are expressed as percentile scores referenced to appropriate subsamples of a nationally representative group of nearly 12,000 young women and men, ages 16-23, who took ASVAB-8a between July and October of 1980. This administration, sponsored by the Department of Defense and conducted by the National Opinion Research Center of the University of Chicago, marked the first time that a *nationally representative* sample of young people had ever been given a vocational aptitude battery. The sample, or Reference Population, had already been selected and was under study in the National Longitudinal Survey of Youth Labor Force Behavior, sponsored by the Departments of Labor and Defense.

The sample contained approximately equal proportions of young women and men, including individuals from urban and rural areas and from all major census regions. Blacks, Hispanics, and economically disadvantaged Whites were oversampled to obtain adequate numbers for subgroup analyses. The sample was then weighted to represent accurately the national population distribution for all groups. Breakdowns of the sample, in unweighted and weighted forms, and comparisons of these breakdowns to the national population are presented in Table 3-1.

Table 3-1

Comparison of the ASVAB Reference Population to the National Population of 16-23 Year-Olds

Subgroup	N in Reference Population: Unweighted	N in Reference Population: Weighted	Percent of Reference Population (Weighted)	Percent of National Population of 16-23 Year Olds
White †				
Men	3,531	13,393,060	41	41
Women	3,496	12,946,550	39	39
Total	7,027	26,339,610	80	80
Black				
Men	1,511	2,278,490	7	7
Women	1,511	2,276,440	7	7
Total	3,022	4,554,930	14	14
Hispanic				
Men	902	1,031,890	3	3
Women	927	1,014,310	3	3
Total	1,829	2,046,200	6	6
Reference Population				
Men	5,944	16,703,440	51	51
Women	5,934	16,237,300	49	49
Total	11,878	32,940,740	100	100

Note. National population percentages are from U.S. Bureau of the Census, 1979.
† "White" includes all non-Blacks and non-Hispanics.

The norm groups against which students are compared on the ASVAB are based on subsamples of the larger Reference Population. These subsamples include four norm groups:

- The *Grade 11 Norm Group* consists of approximately 1,300 students in Grade 11. Because of insufficient numbers of 10th-grade students in the Reference Population, Grade 10 norms were not developed. Tenth graders are most comparable in age and education to 11th graders. Consequently, 10th graders as well as 11th graders are compared to this group.
- The *Grade 12 Norm Group* consists of approximately 1,200 students in Grade 12.
- The *Two-Year College Norm Group* consists of approximately 750 students in two-year postsecondary schools.
- The *Youth Population Norm Group* consists of approximately 9,000 women and men, representative of all American young people ages 18-23.

Information on the composition of the norm groups, by sex, is presented in Appendix D. Complete information on the sex and racial/ethnic group composition of the Reference Population and subsamples, and norm tables for each, are included in the *Technical Supplement to the Counselor's Manual for ASVAB-14 (1984)*. Additional information on the collection of the norming data can be found in *Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery* (U.S. Department of Defense, 1982b).

Parallelism of Forms

ASVAB-14 is parallel to ASVAB Forms 8(a and b), 9(a and b), and 10(a and b), which the military has administered to service applicants since 1980 (Ree, Mathews, Mullins, & Massey, 1982; Ree, Mullins, Mathews, & Massey, 1982). The parallelism of different versions of the ASVAB is important to the Department of Defense to ensure that a percentile score on one test form can be interpreted in the same way as a score on another. Parallelism also is important to users of ASVAB-14 because it permits them to draw on the sizeable existing body of research using ASVAB Forms 8, 9, and 10. Estimates of the reliability and validity of the current ASVAB can be computed from data on these parallel forms of the test battery.

Reliability

One of the critical technical qualities of a test is its reliability. There are several methods for estimating a test's reliability, including the computation of alternate-form reliability coefficients and measures of internal consistency. Alternate-form reliability coefficients for the ASVAB-14 composites are shown in Table 3-2; the coefficients for the ASVAB composites range between .84 and .93 for women and between .88 and .95 for men. Internal-consistency measures (Kuder-Richardson Formula 20 reliability coefficients) are presented, along with more detailed alternate-form reliability data and subsample size information, in Appendix D.

Table 3-2

Alternate-Form Reliability Coefficients by ASVAB Composite

Composite	Range of Reliability Coefficients
Academic Ability	.88 - .94
Verbal	.89 - .94
Math	.90 - .94
Mechanical & Crafts	.84 - .93
Business & Clerical	.90 - .94
Electronics & Electrical	.90 - .94
Health, Social, & Technology	.91 - .95

Note. The reliability coefficient ranges were calculated from data for service applicants in 1983 who took (a) parts of Form 8a and all of Form 9(a or b) or (b) parts of Form 8a and all of Form 10(a or b). Each range includes 10 coefficients, which reflect the 10 subsamples for which norms are available: women, men, and combined sexes for Grades 11 and 12 and two-year colleges, and combined sexes for the Youth Population.

Validity

One of the central concerns of counselors with regard to testing is whether the tests they use are valid. That is, do the tests accurately measure what they are purported to measure, and are the results applicable to the intended population? For the ASVAB, validity is a matter of whether the test accurately forecasts success in future educational programs and predicts performance in various military and civilian occupations.

Military Validity Studies of the ASVAB

Since the introduction of forms parallel to ASVAB-14 in 1980, the military services have collected criterion data for individuals entering hundreds of military specialties. Extensive research demonstrates that the ASVAB composites used in military selection and classification predict performance in training for a variety of military occupations (Booth-Kewley, 1983; Maier & Truss, 1983; Rossmeissl, Martin, & Wing, 1983; Wilbourn, Valentine, & Ree, 1984). For example, validity coefficients for electrical/mechanical equipment repair specialties range from .36 to .74; those for communication specialties range from .36 to .52; those for data processing specialties range from .39 to .77; and those for clerical and supply specialties range from .53 to .73. These coefficients have been corrected for restriction in range. The complete set of validity data, gathered on 11 Army specialties, 47 Navy ratings, 50 Marine Corps specialties, and 70 Air Force specialties, is provided in the *Test Manual for the Armed Services Vocational Aptitude Battery* (U.S. Department of Defense, 1984c). A large scale research program is underway to develop measures of on-the-job performance after training (U.S. Department of Defense, 1981, 1982a, 1983). The ability of the ASVAB composites to predict job performance based on these measures will be assessed.

Recently, the composites used with ASVAB-14 have been shown to predict performance in more than 50 military technical training courses. The median coefficient for each composite is over .60, indicating that the ASVAB-14 composites are valid predictors of training performance for military occupations (U.S. Department of Defense, 1984b; Maier & Truss, 1984).

Civilian Validity Studies of the ASVAB

Previous forms of the ASVAB have been validated in civilian settings against high school and postsecondary school course grades; data are available on the ability of ASVAB-5 to predict success in high school and postsecondary school courses (Wilfong, 1980). Because the correlations between the *academic composites* of ASVAB Forms 5 and 14 are above .90, the results from this research can be generalized to ASVAB-14.

Moreover, there is analytic support for the validity of ASVAB-14 for civilian occupations from two sources: (a) a fairly recent development in testing research called validity generalization (Schmidt & Hunter, 1977; Hunter, Schmidt, & Jackson, 1982), and (b) a project that linked all military occupational specialties to their civilian occupational counterparts.

A basic premise underlying validity generalization is that validity coefficients from similar tests can be compared and averaged across time and settings to achieve an overall statement of prediction. Hunter (1983) has shown that the verbal and math tests of the *General Aptitude Test Battery* (GATB) are psychometrically equivalent to similar subtests from the ASVAB. Since psychometrically equivalent tests have the same validity, the validity of the ASVAB can be estimated from empirical data gathered on the GATB.

The GATB, used by the U.S. Employment Service in personnel selection research, has a data base of more than 500 validation studies on a representative sample of 12,000 jobs contained in the *Dictionary of Occupational Titles (DOT)* (U.S. Department of Labor, 1983a, 1983b). Hunter (1980) reports average validity coefficients ranging from .23 to .58 for the GATB in predicting performance in civilian occupations. By virtue of its relationship to the GATB, the ASVAB would be expected to yield scores with comparable validity for the same occupational groups.

A major study, completed by the Department of Defense in 1984, applied job analysis techniques to link *DOT* occupational codes and the various Military Occupational Specialty (MOS) codes used by the military services and the Coast Guard to classify their military personnel. Civilian occupational counterparts were found for approximately 80% of enlisted occupations and 60% of officer occupations. The findings of this project, available in the *Military-Civilian Occupational Crosswalk Manual* (U.S. Department of Defense, 1984a), can be used in conjunction with ASVAB validity data for military specialties and the validity generalization of the GATB to the ASVAB to draw inferences concerning the validity of ASVAB composites for predicting performance in related civilian occupations.

Test Bias and Differential Prediction

The Army and Air Force have reported separate validation data for Blacks and Whites, and for women and men who took ASVAB Form 8, 9, or 10. For those occupations for which adequate samples were available, no major sex or race differences were found in predictions based upon ASVAB scores (Fast & Martin, 1984). Similarly, in reviewing data relating scores on an earlier ASVAB form to performance in 43 Air Force technical training schools, Bock and Moore (1984) concluded that there was no evidence that the use of the ASVAB resulted in biased selection favoring Whites to Blacks or men to women. A more detailed discussion of the equity of the ASVAB for personnel selection and job placement can be found in Eitelberg, Laurence, Waters, and Perelman (1984), and in Bock and Mislevy (1981).

Summary of ASVAB Validity

The ASVAB is a valid predictor of successful performance in educational programs and in various military and civilian occupations. Scores from the ASVAB predict success in high school and postsecondary school courses as well as military occupational training programs. The usefulness of ASVAB scores for predicting performance in civilian occupations is supported by (a) the abundance of data linking ASVAB scores to military occupations; (b) analyses linking civilian and military occupations; and (c) the strong relationship between scores on the ASVAB and those on the GATB, a test battery with extensive validity data for civilian workers. In addition, scores from the ASVAB do not systematically underestimate the performance of minority group members or women.

ASVAB-14 Composites

Three different approaches were used in developing the seven composites reported for ASVAB-14. *Verbal* and *Math* were derived through factor analysis. The third academic composite, *Academic Ability*, used historically as an indicator of general learning ability, was derived by combining the ASVAB verbal and quantitative subtests that relate to performance in formal education. Although not distinct from the *Verbal* and *Math* composites in a psychometric sense, *Academic Ability* has proved to be a useful measure for predicting performance in many educational settings.

The four *occupational composites* were derived through regression analysis of those ASVAB subtest scores that predicted performance in military training courses. In essence, this analysis identified the combinations of subtests that are predictive of success in military training for the types of occupational specialties related to the four *occupational composites*. Psychometric data, including standard errors of measurement and composite intercorrelations, appear in Appendix D and in the *Technical Supplement to the Counselor's Manual for ASVAB-14 (1984)*.

4

ASVAB RESULTS

The military mails ASVAB results to schools within 30 days after testing. Results are provided in reports that facilitate the interpretation of scores and the use of results by schools. This chapter describes the materials used to report results and explains how these materials can be used to interpret ASVAB scores.

Report Forms

Schools receive test results in two different report formats: (a) the *ASVAB Results Sheet*, one for each student tested, and (b) the *ASVAB Test Score Results Roster*, one for each school where testing occurred.

ASVAB Results Sheet

The *ASVAB Results Sheet* consists of three detachable sections: *Your ASVAB Results*, the *Counselor Summary*, and the *Parent Postcard*. The results sheets usually are organized alphabetically, by grade. Before scoring occurs, counselors select the method by which they would like the results sheets organized for return to the school: by specific student subgroups (e.g., all students assigned to one counselor) or sorted alphabetically, by grade. The front and back of the student results sheet are shown in Figures 4-1 and 4-2, respectively.

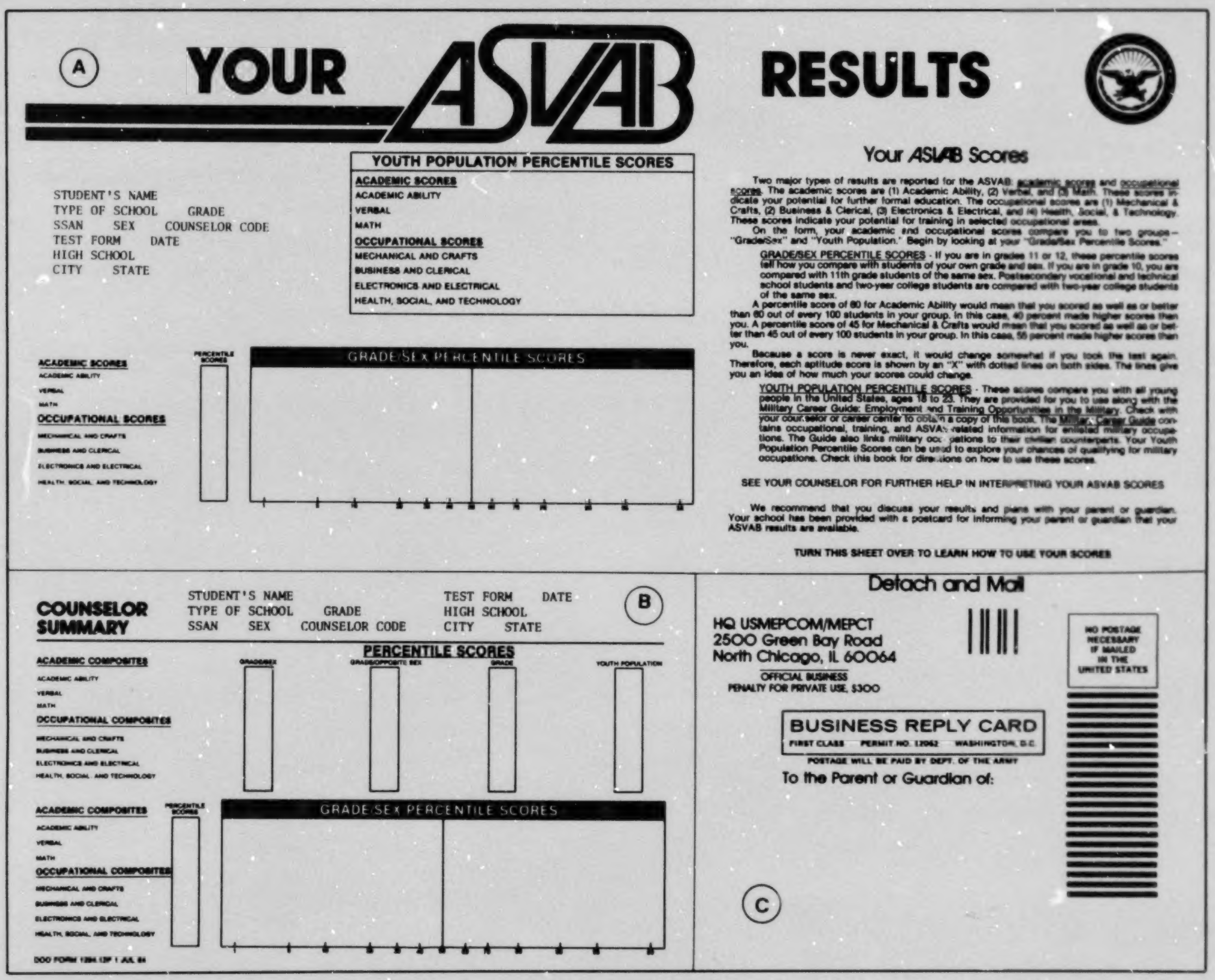
Your ASVAB Results

The student's section of the results sheet is called *Your ASVAB Results*. The information printed on the front of this section, shown in Part A of Figure 4-1, contains

- student identification information (name, grade, social security number, sex, and school);
- percentile scores for *academic* and *occupational composites* by Youth Population;
- percentile scores for *academic* and *occupational composites* by grade/sex;
- graphic representations of student same-sex percentile scores in a profile format using confidence bands to indicate probable range of true composite scores; and
- an interpretive guide to help students understand their results.

The back of the student's section, shown in Part A of Figure 4-2, contains

- a brief discussion of aptitude testing and the use of ASVAB-14 results; and
- occupational groupings of sample military and civilian occupations that are related to specific *occupational composites*.



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YOUR ASVAB RESULTS

STUDENT'S NAME
TYPE OF SCHOOL GRADE
SSAN SEX COUNSELOR CODE
TEST FORM DATE
HIGH SCHOOL
CITY STATE

YOUTH POPULATION PERCENTILE SCORES

ACADEMIC SCORES
ACADEMIC ABILITY
VERBAL
MATH
OCCUPATIONAL SCORES
MECHANICAL AND CRAFTS
BUSINESS AND CLERICAL
ELECTRONICS AND ELECTRICAL
HEALTH, SOCIAL, AND TECHNOLOGY

ACADEMIC SCORES
ACADEMIC ABILITY
VERBAL
MATH
OCCUPATIONAL SCORES
MECHANICAL AND CRAFTS
BUSINESS AND CLERICAL
ELECTRONICS AND ELECTRICAL
HEALTH, SOCIAL, AND TECHNOLOGY

PERCENTILE SCORES

GRADE/SEX PERCENTILE SCORES

Your ASVAB Scores

Two major types of results are reported for the ASVAB: academic scores and occupational scores. The academic scores are (1) Academic Ability, (2) Verbal, and (3) Math. These scores indicate your potential for further formal education. The occupational scores are (1) Mechanical & Crafts, (2) Business & Clerical, (3) Electronics & Electrical, and (4) Health, Social, & Technology. These scores indicate your potential for training in selected occupational areas.

On the form, your academic and occupational scores compare you to two groups—"Grade/Sex" and "Youth Population." Begin by looking at your "Grade/Sex Percentile Scores."

GRADE/SEX PERCENTILE SCORES - If you are in grades 11 or 12, these percentile scores tell how you compare with students of your own grade and sex. If you are in grade 10, you are compared with 11th grade students of the same sex. Postsecondary vocational and technical school students and two-year college students are compared with two-year college students of the same sex.

A percentile score of 60 for Academic Ability would mean that you scored as well as or better than 60 out of every 100 students in your group. In this case, 40 percent made higher scores than you. A percentile score of 45 for Mechanical & Crafts would mean that you scored as well as or better than 45 out of every 100 students in your group. In this case, 55 percent made higher scores than you.

Because a score is never exact, it would change somewhat if you took the test again. Therefore, each aptitude score is shown by an "X" with dotted lines on both sides. The lines give you an idea of how much your scores could change.

YOUTH POPULATION PERCENTILE SCORES - These scores compare you with all young people in the United States, ages 18 to 23. They are provided for you to use along with the Military Career Guide: Employment and Training Opportunities in the Military. Check with your counselor or career center to obtain a copy of this book. The Military Career Guide contains occupational, training, and ASVAB-related information for enlisted military occupations. The Guide also links military occupations to their civilian counterparts. Your Youth Population Percentile Scores can be used to explore your chances of qualifying for military occupations. Check this book for directions on how to use these scores.

SEE YOUR COUNSELOR FOR FURTHER HELP IN INTERPRETING YOUR ASVAB SCORES

We recommend that you discuss your results and plans with your parent or guardian. Your school has been provided with a postcard for informing your parent or guardian that your ASVAB results are available.

TURN THIS SHEET OVER TO LEARN HOW TO USE YOUR SCORES

COUNSELOR SUMMARY

STUDENT'S NAME
TYPE OF SCHOOL GRADE
SSAN SEX COUNSELOR CODE

TEST FORM DATE
HIGH SCHOOL
CITY STATE

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PERCENTILE SCORES

GRADE/SEX GRADE/OPPOSITE SEX GRADE YOUTH POPULATION

ACADEMIC COMPOSITES
ACADEMIC ABILITY
VERBAL
MATH
OCCUPATIONAL COMPOSITES
MECHANICAL AND CRAFTS
BUSINESS AND CLERICAL
ELECTRONICS AND ELECTRICAL
HEALTH, SOCIAL, AND TECHNOLOGY

ACADEMIC COMPOSITES
ACADEMIC ABILITY
VERBAL
MATH
OCCUPATIONAL COMPOSITES
MECHANICAL AND CRAFTS
BUSINESS AND CLERICAL
ELECTRONICS AND ELECTRICAL
HEALTH, SOCIAL, AND TECHNOLOGY

PERCENTILE SCORES

GRADE/SEX PERCENTILE SCORES

DD FORM 1304.12P 1 JUL 84

Detach and Mail

HQ USMEPCOM/MEPCT
2500 Green Bay Road
North Chicago, IL 60064

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 12062 WASHINGTON, D.C.

POSTAGE WILL BE PAID BY DEPT. OF THE ARMY

To the Parent or Guardian of:

Ⓒ

Figure 4-1. *ASVAB Results Sheet* (Front). (Part A is *Your ASVAB Results*, Part B is the *Counselor Summary*, and Part C is the *Parent Postcard*.)

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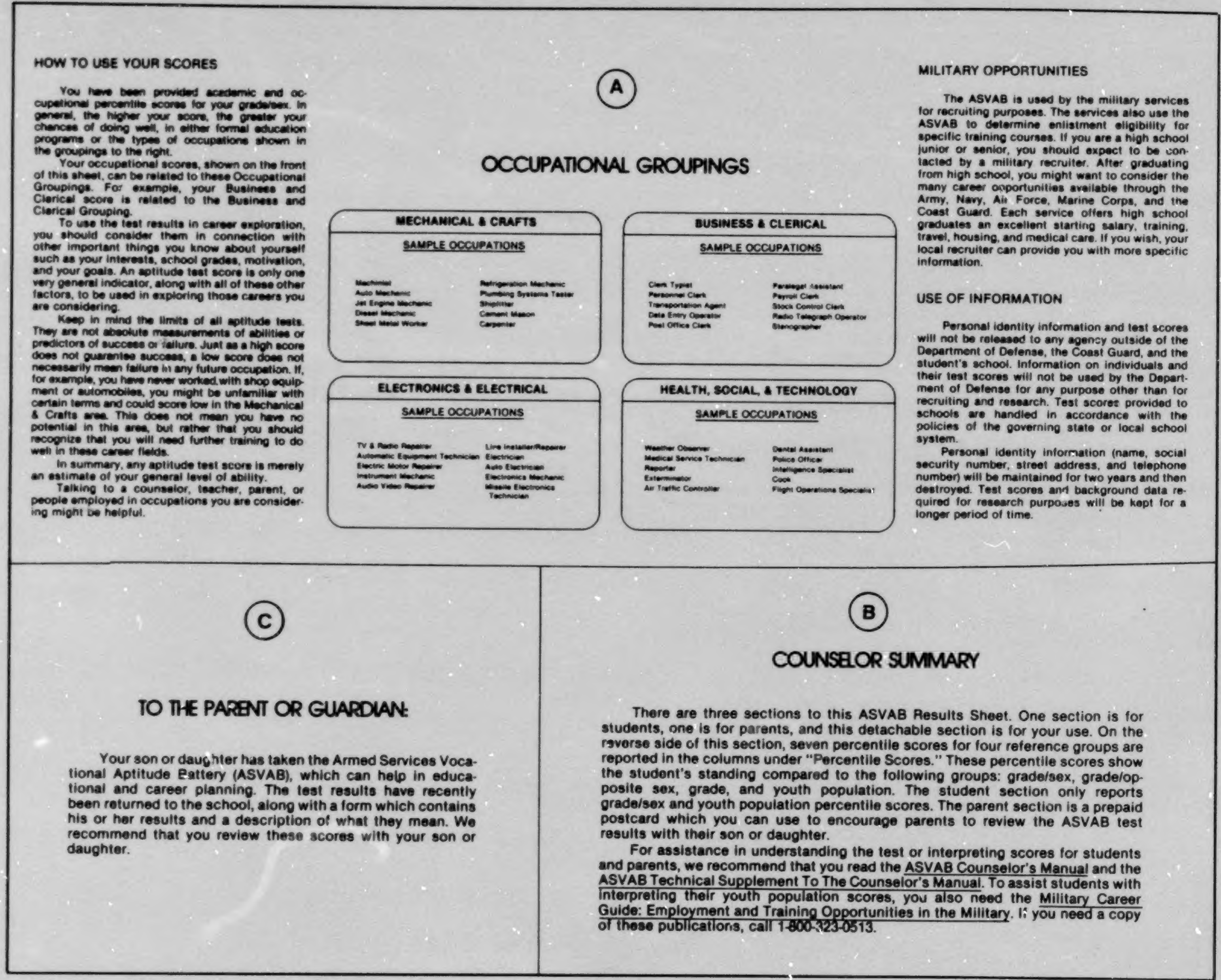

HOW TO USE YOUR SCORES

You have been provided academic and occupational percentile scores for your grade/sex. In general, the higher your score, the greater your chances of doing well, in either formal education programs or the types of occupations shown in the groupings to the right.

Your occupational scores, shown on the front of this sheet, can be related to these Occupational Groupings. For example, your Business and Clerical score is related to the Business and Clerical Grouping.

To use the test results in career exploration, you should consider them in connection with other important things you know about yourself such as your interests, school grades, motivation, and your goals. An aptitude test score is only one very general indicator, along with all of these other factors, to be used in exploring those careers you are considering.

Keep in mind the limits of all aptitude tests. They are not absolute measurements of abilities or predictors of success or failure. Just as a high score does not guarantee success, a low score does not necessarily mean failure in any future occupation. If, for example, you have never worked with shop equipment or automobiles, you might be unfamiliar with certain terms and could score low in the Mechanical & Crafts area. This does not mean you have no potential in this area, but rather that you should recognize that you will need further training to do well in these career fields.

In summary, any aptitude test score is merely an estimate of your general level of ability.

Talking to a counselor, teacher, parent, or people employed in occupations you are considering might be helpful.

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OCCUPATIONAL GROUPINGS

MECHANICAL & CRAFTS

SAMPLE OCCUPATIONS

Machinist
Auto Mechanic
Jet Engine Mechanic
Diesel Mechanic
Sheet Metal Worker
Refrigeration Mechanic
Plumbing Systems Tester
Shipfitter
Cement Mason
Carpenter

BUSINESS & CLERICAL

SAMPLE OCCUPATIONS

Clerk Typist
Personnel Clerk
Transportation Agent
Data Entry Operator
Post Office Clerk
Paralegal Assistant
Payroll Clerk
Stock Control Clerk
Radio Telegraph Operator
Stenographer

ELECTRONICS & ELECTRICAL

SAMPLE OCCUPATIONS

TV & Radio Repairer
Automatic Equipment Technician
Electric Motor Repairer
Instrument Mechanic
Audio Video Repairer
Line Installer/Repairer
Electrician
Auto Electrician
Electronics Mechanic
Missile Electronics Technician

HEALTH, SOCIAL, & TECHNOLOGY

SAMPLE OCCUPATIONS

Weather Observer
Medical Service Technician
Reporter
Exterminator
Air Traffic Controller
Dental Assistant
Police Officer
Intelligence Specialist
Cook
Flight Operations Specialist

MILITARY OPPORTUNITIES

The ASVAB is used by the military services for recruiting purposes. The services also use the ASVAB to determine enlistment eligibility for specific training courses. If you are a high school junior or senior, you should expect to be contacted by a military recruiter. After graduating from high school, you might want to consider the many career opportunities available through the Army, Navy, Air Force, Marine Corps, and the Coast Guard. Each service offers high school graduates an excellent starting salary, training, travel, housing, and medical care. If you wish, your local recruiter can provide you with more specific information.

USE OF INFORMATION

Personal identity information and test scores will not be released to any agency outside of the Department of Defense, the Coast Guard, and the student's school. Information on individuals and their test scores will not be used by the Department of Defense for any purpose other than for recruiting and research. Test scores provided to schools are handled in accordance with the policies of the governing state or local school system.

Personal identity information (name, social security number, street address, and telephone number) will be maintained for two years and then destroyed. Test scores and background data required for research purposes will be kept for a longer period of time.

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TO THE PARENT OR GUARDIAN:

Your son or daughter has taken the Armed Services Vocational Aptitude Battery (ASVAB), which can help in educational and career planning. The test results have recently been returned to the school, along with a form which contains his or her results and a description of what they mean. We recommend that you review these scores with your son or daughter.

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COUNSELOR SUMMARY

There are three sections to this ASVAB Results Sheet. One section is for students, one is for parents, and this detachable section is for your use. On the reverse side of this section, seven percentile scores for four reference groups are reported in the columns under "Percentile Scores." These percentile scores show the student's standing compared to the following groups: grade/sex, grade/opposite sex, grade, and youth population. The student section only reports grade/sex and youth population percentile scores. The parent section is a prepaid postcard which you can use to encourage parents to review the ASVAB test results with their son or daughter.

For assistance in understanding the test or interpreting scores for students and parents, we recommend that you read the ASVAB Counselor's Manual and the ASVAB Technical Supplement To The Counselor's Manual. To assist students with interpreting their youth population scores, you also need the Military Career Guide: Employment and Training Opportunities in the Military. If you need a copy of these publications, call 1-800-323-0513.

Figure 4-2. *ASVAB Results Sheet* (Back). (Part A is *Your ASVAB Results*, Part B is the *Counselor Summary*, and Part C is the *Parent Postcard*.)

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Counselor Summary

The *Counselor Summary* is a record of the test results for each student tested (Part B of Figures 4-1 and 4-2). After test interpretation, it can be filed in the student's cumulative record. The *Counselor Summary* reports

- student identification information (name, grade, social security number, sex, and school);
- percentile scores for *academic* and *occupational composites* by grade/sex;
- percentile scores for *academic* and *occupational composites* by grade/opposite sex;
- percentile scores for *academic* and *occupational composites* by grade;
- percentile scores for *academic* and *occupational composites* by Youth Population;
- graphic representations of student same-sex percentile scores in a profile format using confidence bands to indicate probable range of true composite scores; and
- on the back, general information about the *ASVAB Results Sheet*.

Parent Postcard

It is important that parents are informed that their daughter or son has received ASVAB results so that these results may be discussed at home. One section of the *ASVAB Results Sheet*, the *Parent Postcard*, is a postage-paid card that can be mailed to parents and guardians by the school. The *Parent Postcard*, shown in Part C of Figures 4-1 and 4-2, informs parents and guardians that their daughter's or son's ASVAB results have been received by the school. Test scores are not presented on the postcard.

ASVAB Test Score Results Roster

The *ASVAB Test Score Results Roster* presents, alphabetically within grade, test scores of all students who took the ASVAB at a particular testing session and provides a statistical summary of scores by grade and school. The roster provides information to help counselors and school officials develop local norms and analyze test results.

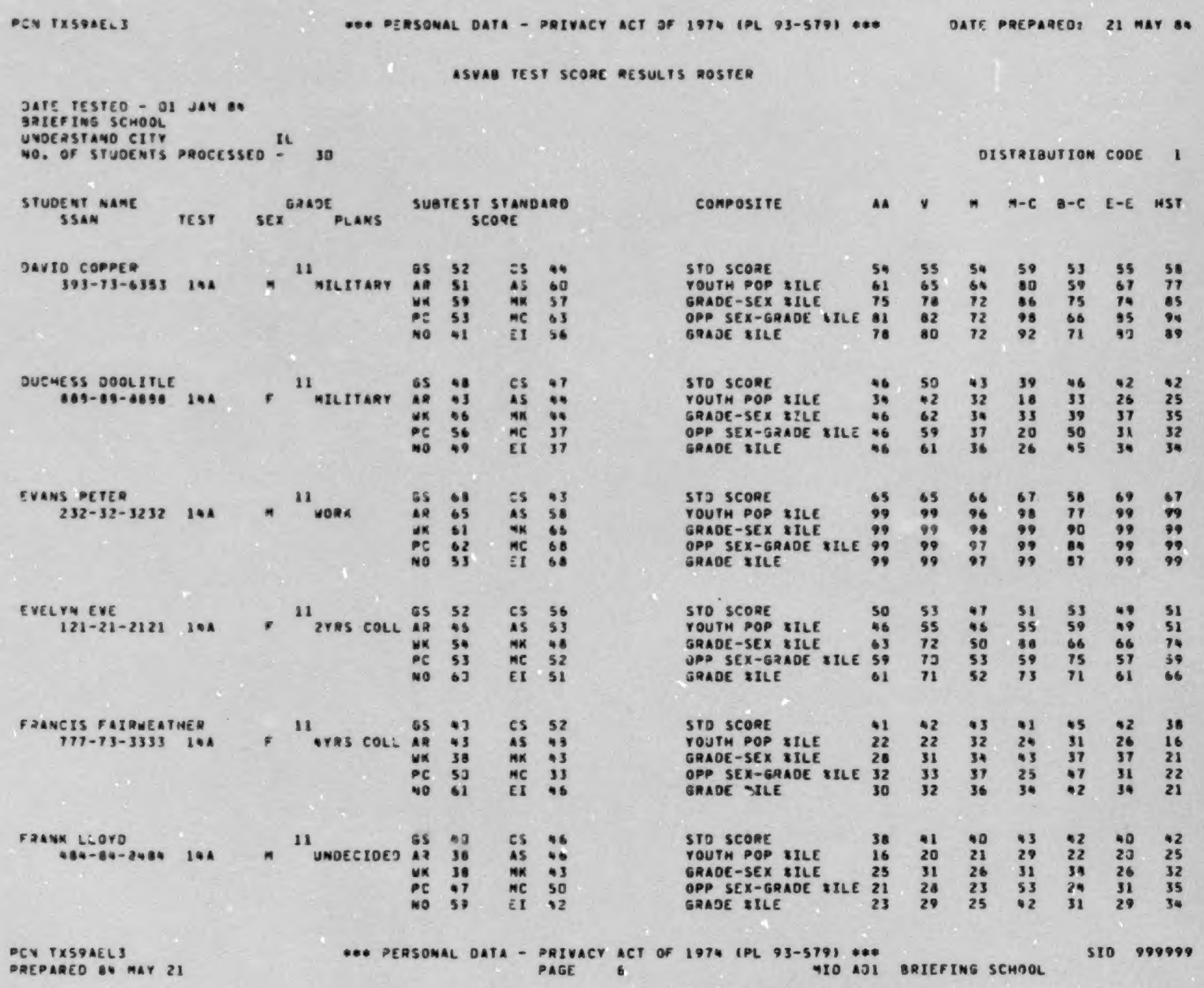
The first page of the *ASVAB Test Score Results Roster* contains school identification information. The alphabetical listing, shown in Figure 4-3, begins on the second page of the roster. For each student tested, the alphabetical listing includes the following information:

- student identification information (name, grade, social security number, sex, and school);
- student self-reported career plans following graduation;
- standard scores (based on a mean of 50 and a standard deviation of 10) for subtests;

- standard scores (based on a mean of 50 and a standard deviation of 10) for *academic* and *occupational composites*;
- percentile scores for *academic* and *occupational composites* by Youth Population;
- percentile scores for *academic* and *occupational composites* by grade/sex;
- percentile scores for *academic* and *occupational composites* by grade/opposite sex; and
- percentile scores for *academic* and *occupational composites* by grade.

Statistical reports of scores, by grade and school, (shown in Figure 4-4), appear on the last page(s) of the roster. The statistics provided are

- mean standard scores and standard deviations for subtests;
- mean standard scores and standard deviations for *academic* and *occupational composites*;
- median percentile scores and semi-interquartile ranges (Q) for *academic* and *occupational composites* by Youth Population; and
- median percentile scores and semi-interquartile ranges (Q) for *academic* and *occupational composites* by grade.



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PCN TX59AEL3               *** PERSONAL DATA - PRIVACY ACT OF 1974 (PL 93-579) ***        DATE PREPARED:  21 MAY 84

                                          ASVAB TEST SCORE RESULTS ROSTER

 DATE TESTED - 01 JAN 84
 BRIEFING SCHOOL
 UNDERSTAND CITY               IL
 NO. OF STUDENTS PROCESSED -    30                                                          DISTRIBUTION CODE   1

 STUDENT NAME              GRADE      SUBTEST STANDARD            COMPOSITE          AA    V     M    M-C  B-C  E-E  MST
     SSAN         TEST    SEX     PLANS        SCORE

 DAVID COPPER               11          GS  52    CS  44          STD SCORE           54    55    54    59   53   55   58
     393-73-6353  14A      M     MILITARY AR  51    AS  60          YOUTH POP %ILE      61    65    64    80   59   67   77
                                         WK  59    MK  57          GRADE-SEX %ILE      75    78    72    86   75   74   85
                                         PC  53    MC  63          OPP SEX-GRADE %ILE  81    82    72    98   66   95   94
                                         NO  41    EI  56          GRADE %ILE          78    80    72    92   71   90   89

 DUCHESS DOOLITLE           11          GS  48    CS  47          STD SCORE           46    50    43    39   46   42   42
     889-89-6898  14A      F     MILITARY AR  43    AS  44          YOUTH POP %ILE      34    42    32    18   33   26   25
                                         WK  46    MK  44          GRADE-SEX %ILE      46    62    34    33   39   37   35
                                         PC  56    MC  37          OPP SEX-GRADE %ILE  46    59    37    20   50   31   32
                                         NO  49    EI  37          GRADE %ILE          46    61    36    26   45   34   34

 EVANS PETER                11          GS  68    CS  43          STD SCORE           65    65    66    67   58   69   67
     232-32-3232  14A      M     WORK     AR  65    AS  58          YOUTH POP %ILE      99    99    96    98   77   99   99
                                         WK  61    MK  65          GRADE-SEX %ILE      99    99    98    99   90   99   99
                                         PC  62    MC  68          OPP SEX-GRADE %ILE  99    99    97    99   84   99   99
                                         NO  53    EI  68          GRADE %ILE          99    99    97    99   87   99   99

 EVELYN EVE                 11          GS  52    CS  56          STD SCORE           50    53    47    51   53   49   51
     121-21-2121  14A      F    2YRS COLL AR  45    AS  53          YOUTH POP %ILE      46    55    45    55   59   49   51
                                         WK  54    MK  48          GRADE-SEX %ILE      63    72    50    88   66   66   74
                                         PC  53    MC  52          OPP SEX-GRADE %ILE  59    70    53    59   75   57   59
                                         NO  60    EI  51          GRADE %ILE          61    71    52    73   71   61   66

 FRANCIS FAIRWEATHER        11          GS  43    CS  52          STD SCORE           41    42    43    41   45   42   38
     777-73-3333  14A      F    4YRS COLL AR  43    AS  49          YOUTH POP %ILE      22    22    32    24   31   26   16
                                         WK  38    MK  43          GRADE-SEX %ILE      28    31    34    43   37   37   21
                                         PC  50    MC  33          OPP SEX-GRADE %ILE  32    33    37    25   47   31   22
                                         NO  61    EI  46          GRADE %ILE          30    32    36    34   42   34   21

 FRANK LLOYD                11          GS  40    CS  46          STD SCORE           38    41    40    43   42   40   42
     484-84-2484  14A      M    UNDECIDED AR  38    AS  46          YOUTH POP %ILE      16    20    21    29   22   20   25
                                         WK  38    MK  43          GRADE-SEX %ILE      25    31    26    31   38   26   32
                                         PC  47    MC  50          OPP SEX-GRADE %ILE  21    28    23    53   24   31   35
                                         NO  59    EI  42          GRADE %ILE          23    29    25    42   31   29   34

PCN TX59AEL3               *** PERSONAL DATA - PRIVACY ACT OF 1974 (PL 93-579) ***                      SID  999999
PREPARED 84 MAY 21                                 PAGE    6                  MID A01  BRIEFING SCHOOL
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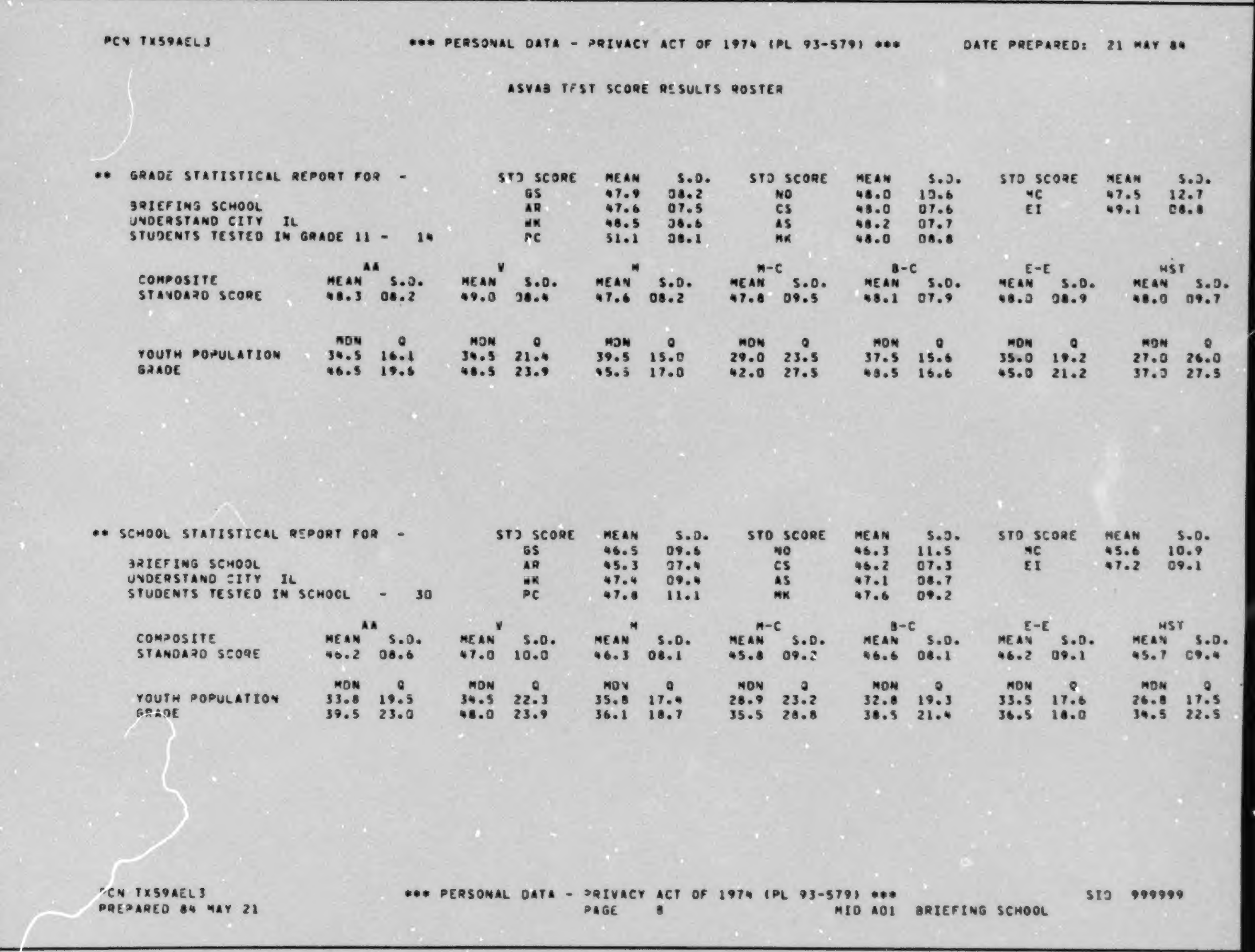
igure 4-3. *ASVAB Test Score Results Roster*, alphabetical listing, with hypothetical data.



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PCN TX59AEL3                    *** PERSONAL DATA - PRIVACY ACT OF 1974 (PL 93-579) ***        DATE PREPARED:  21 MAY 84

                                             ASVAB TEST SCORE RESULTS ROSTER


**  GRADE STATISTICAL REPORT FOR  -            STD SCORE   MEAN    S.D.    STD SCORE   MEAN    S.D.    STD SCORE   MEAN    S.D.
                                                  GS       47.9    08.2       NO       48.0    10.6       MC       47.5    12.7
    BRIEFING SCHOOL                               AR       47.6    07.5       CS       48.0    07.6       EI       49.1    08.8
    UNDERSTAND CITY  IL                           WK       48.5    08.6       AS       48.2    07.7
    STUDENTS TESTED IN GRADE 11 -    14           PC       51.1    08.1       MK       48.0    08.8

                          AA            V            M            M-C           B-C           E-E           HST
     COMPOSITE         MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.
     STANDARD SCORE    48.3  08.2   49.0  08.4   47.6  08.2   47.8  09.5   48.1  07.9   48.0  08.9   48.0  09.7


                       MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q
     YOUTH POPULATION  34.5  16.1   34.5  21.4   39.5  15.0   29.0  23.5   37.5  15.6   35.0  19.2   27.0  26.0
     GRADE             46.5  19.6   48.5  23.9   45.5  17.0   42.0  27.5   48.5  16.6   45.0  21.2   37.0  27.5




** SCHOOL STATISTICAL REPORT FOR  -            STD SCORE   MEAN    S.D.    STD SCORE   MEAN    S.D.    STD SCORE   MEAN    S.D.
                                                  GS       46.5    09.6       NO       46.3    11.5       MC       45.6    10.9
    BRIEFING SCHOOL                               AR       45.3    07.4       CS       46.2    07.3       EI       47.2    09.1
    UNDERSTAND CITY  IL                           WK       47.4    09.4       AS       47.1    08.7
    STUDENTS TESTED IN SCHOOL    -    30          PC       47.8    11.1       MK       47.6    09.2

                          AA            V            M            M-C           B-C           E-E           HST
     COMPOSITE         MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.   MEAN  S.D.
     STANDARD SCORE    46.2  08.6   47.0  10.0   46.3  08.1   45.8  09.2   46.6  08.1   46.2  09.1   45.7  09.4

                       MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q     MDN    Q
     YOUTH POPULATION  33.8  19.5   34.5  22.3   35.8  17.4   28.9  23.2   32.8  19.3   33.5  17.6   26.8  17.5
     GRADE             39.5  23.0   48.0  23.9   36.1  18.7   35.5  28.8   38.5  21.4   36.5  18.0   34.5  22.5




PCN TX59AEL3                    *** PERSONAL DATA - PRIVACY ACT OF 1974 (PL 93-579) ***                    SID  999999
PREPARED 84 MAY 21                            PAGE    8                     MID A01  BRIEFING SCHOOL
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gure 4-4. *ASVAB Test Score Results Roster*, statistical reports, with hypothetical data.

Understanding the Results

The Role of Aptitude Testing

Aptitude testing often stimulates further career exploration, and the results of multiple aptitude test batteries contribute to realistic and informed career decision making. ASVAB results, like the results of other multiple aptitude batteries, can be interpreted to answer such questions as:

- Should a student consider being a medical technician?
- Should a student explore various occupations in the electronics field?
- Does a student have the potential to do well in a dental technician training program?

Multiple aptitude batteries are not intended to select specific careers for individual students. In addition, these tests cannot answer such specific questions as:

- Will a student be a good aircraft systems mechanic?
- Will a student enjoy working with computers?
- Will a student be successful working in the nuclear engineering field?

At best, only partial answers to these questions can be formulated. For example, the *Mechanical & Crafts* score on the ASVAB provides an index of the individual's ability to understand and apply mechanical principles. This is one of the aptitudes required of aircraft systems mechanics. Many other factors, however, which cannot be measured by a multiple aptitude battery, should be considered by a student before deciding upon a specific career path.

Percentiles

The ASVAB results are reported to counselor and student as percentile scores. Percentiles indicate a student's relative standing on a composite in comparison to a reference group. For example, a 12th grader who scored at the 65th percentile by grade on the *Verbal* composite scored equal to or better than 65% of a nationally representative sample of 12th graders who took the ASVAB in 1980. Thirty-five percent of the 12th graders in the sample performed better on the *Verbal* composite.

Counselors receive four sets of percentile scores for the *academic* and *occupational composites*. These percentile scores are based on norms developed from subsamples of the Reference Population. Counselors receive scores that compare each student tested to the following norm groups:

- individuals of the same sex in the same grade;
- individuals of the opposite sex in the same grade;
- individuals in the same grade; and
- individuals in the Youth Population.

Each student tested receives two sets of percentile scores that compare that student to

- individuals in the Youth Population; and
- individuals of the same sex in the same grade.

While all students receive scores by grade/sex, the grade level on which these scores are based is determined differently for different groups. Eleventh and 12th graders receive scores based on separate 11th-grade and 12th-grade norms. Because ASVAB data are not presently available for a nationally representative sample of 10th graders, 10th-grade scores are based on 11th-grade norms. Postsecondary students receive scores based on norms for students who attend two-year colleges.

Confidence Bands

No test can provide a completely accurate indication of what it is designed to measure. Similarly, an ASVAB percentile is not an exact representation of an individual's true score on a particular composite. Confidence bands, therefore, are used to illustrate the range of test scores within which an examinee's true score probably lies.

On the ASVAB, the confidence band corresponds to plus or minus 1 standard error of measurement from the individual's obtained composite score. In 68% of the cases, this confidence band includes the individual's true score. The range is shown by a dashed line, and an X indicates the individual's obtained score (shown in Figure 4-5).

On the ASVAB, score differences are more likely to be apparent between scores on *Verbal* and *Math* than among scores on the four *occupational composites*. *Verbal* and *Math*, by definition, consist of different types of subtests. All *occupational composites*, however, include subtests that require math and reading abilities. Because of this similarity in subtest composition, confidence bands for scores on the *occupational composites* tend to overlap.

To identify an individual's higher and lower levels of aptitudes, the positions of confidence bands that surround that individual's scores should be examined. When confidence bands for scores overlap substantially, the scores should be interpreted as basically equivalent. When confidence bands for scores do not overlap substantially, a difference between scores should be noted.

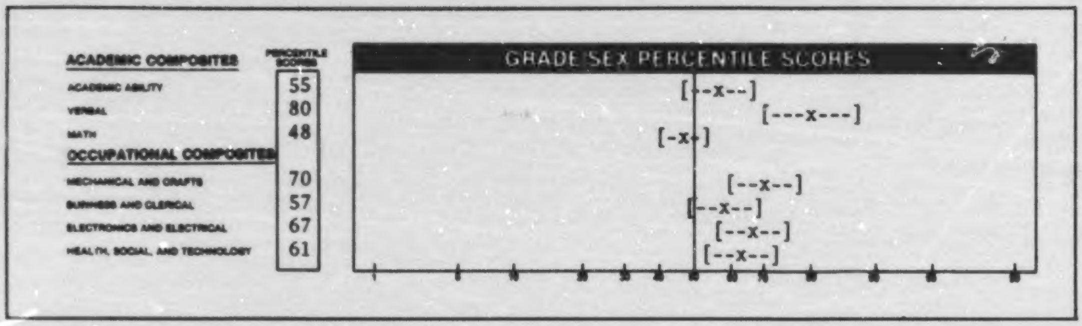


Figure 4-5. Confidence bands.

In Figure 4-5, the student's grade/sex percentile on the *Verbal* composite is higher than the percentiles on *Math* and *Academic Ability*. The confidence band surrounding this score does not overlap with the confidence bands surrounding scores on *Math* and *Academic Ability*. The student's score on *Verbal*, therefore, is significantly higher than scores obtained on the other *academic composites*. On the *occupational composites*, the score obtained on *Mechanical & Crafts* is highest. The confidence band surrounding this score, however, overlaps substantially with the confidence bands surrounding scores on the other *occupational composites*. This overlap indicates that no statistically significant differences exist among these scores.

Confidence bands are provided on the *ASVAB Results Sheet* for scores based on grade/sex norms only. Information needed to determine confidence bands for scores based on other norm groups (e.g., grade/opposite sex, grade, Youth Population) is available in the *Technical Supplement to the Counselor's Manual for ASVAB-14 (1984).*

Standard Scores

Standard scores for ASVAB subtests and composites appear on the alphabetical listing of the results roster shown in Figure 4-3. These standard scores have a mean of 50 and a standard deviation of 10. The ASVAB standard scores are based on the Youth Population norm group described in chapter 3. These scores enable subtests with different numbers of items to be weighted equally and combined to form composites. Occasionally, a student's composite score may not appear representative of that individual's aptitude. The counselor may want to review the student's standard scores for the subtests included in that composite, as reported on the results roster. Very often a relatively low score on one subtest can indicate that a student had difficulty with specific types of questions or following directions for specific tasks.

Separate-Sex Norms

The performance of women and men varies on some ASVAB composites. On the *academic composites*, these differences are not substantial. On the *occupational composites*, however, grade norms may mask important differences in the performances of women and men.

For example, an 11th grader's score could vary on the *Mechanical & Crafts* composite, depending on the norm group used for comparison.

Standard Score	**Percentile by Norm Group**	
50	69	All 11th graders
	84	Women
	54	Men

It is not surprising that these differences exist. The *Electronics & Electrical* and *Mechanical & Crafts* composites include subtests that rely heavily on previous exposure to mechanical, electrical, or auto and shop information. More men than women typically have gained this exposure by the time they are of high school age. This does not necessarily mean that women cannot learn this information and should be discouraged from entering occupations in related areas. Conversely, women traditionally have performed better than men on coding speed tasks. Similarly, this does not necessarily mean that men should be discouraged from entering occupations where coding speed is important. Instead, more care needs to be taken in the interpretation of these scores in order to provide both sexes with a wider, fairer, and more realistic picture of their aptitudes. Separate-sex norms can facilitate this interpretation of ASVAB scores, especially in areas where one sex traditionally has performed better than the other.

For example, if the 11th grader mentioned earlier is a woman, separate-sex norms could tell the following about her *Mechanical & Crafts* composite score:

- She scored at the 84th percentile for 11th-grade women. She knows, therefore, that she compares favorably with her female counterparts in terms of her aptitude for training related to the *Mechanical & Crafts* composite. Given an interest in a career within this area, she feels encouraged to explore specific occupations.
- She expects to have to compete with a predominantly male population to obtain and hold a job in this area. If the student's counselor provides her opposite-sex score to her, the student will understand that she scored at the 54th percentile compared to men. This does not mean she should abandon her investigation of occupations related to this composite. Given her interest in this area, it could mean, however, that she will have to take relevant courses, gain relevant experience, and apply extra effort to compete effectively and to achieve her goal.

The use of separate-sex norms, in this case, enables the student to assess realistically her aptitude for occupations related to the *Mechanical & Crafts* composite. Separate-sex norms indicate how she compares to other 11th-grade women and how she compares to those 11th-grade men with whom she would most likely compete for jobs.

In summary, the following guidelines should be considered when selecting the appropriate scores to discuss with particular students:

- Students receive only same-sex scores on their results sheets in order to reduce confusion. Counselors also receive opposite-sex and grade scores for students on the counselor section of the results sheet. When opposite-sex or grade data are relevant to an individual student, the counselor should share that information with the student.
- If students are interested in occupations in fields where the work is performed primarily by individuals of their own sex, same-sex scores give students a realistic picture of their competitive abilities.
- If students want to pursue nontraditional career fields where the work is performed primarily by members of the opposite sex, same-sex scores should be interpreted in light of opposite-sex information. Students need a realistic picture of where they stand in relation to their competition.
- If students want to investigate career fields where the work is typically performed by both women and men, combined-sex (grade) scores should be consulted.

Youth Population Scores

Students receive a set of scores on their results sheets comparing them to the Youth Population norm group. The Youth Population norm group is a sample of women and men, ages 18-23, weighted to be nationally representative. These scores are intended for use with students who are interested in the military. The Youth Population scores are designed to be used with the *Military Career Guide: Employment and Training Opportunities in the Military*. When used with this guide, ASVAB scores based on this norm group enable students to predict their chances of qualifying for at least one military specialty within an occupation. Additional information on the *Military Career Guide* and its use is found in Appendix E, "*Military Career Guide*," and Handout I, "Using the *Military Career Guide*."

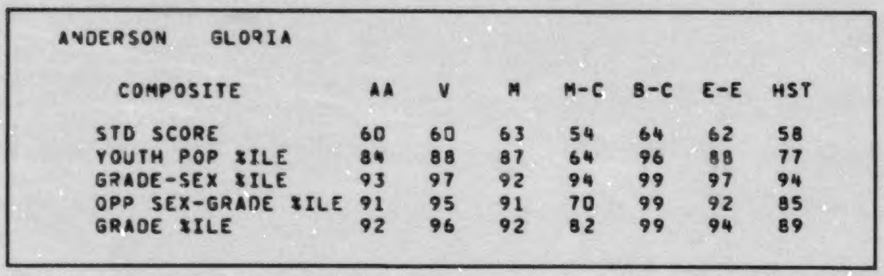
Grade and School Statistical Reports

The grade and school statistical reports, provided on the *ASVAB Test Score Results Roster*, enable counselors to develop local norms and to compare students' scores to those of other students in the school. A counselor may wish, for example, to compare the scores of an 11th grader with those of other 11th graders in the school who took the ASVAB during the same testing session. This comparison can be made using

- the student's standard scores, provided on the alphabetical listing, and the means and standard deviations, provided on the report for students tested in the 11th grade; or
- the student's percentile scores, provided on the alphabetical listing and on the *ASVAB Results Sheet*, and median composite scores and semi-interquartile ranges, provided in the 11th-grade report.

To make this comparison using standard scores, the counselor can create bands for Grade 11 by adding and subtracting standard deviation units to the mean scores for 11th graders. If the student's score is higher than 1 standard deviation above the mean, that score is well above average compared to the other 11th graders in the school who took the test; if the score is below 1 standard deviation from the mean, the score is well below average. Assuming the distribution of scores for 11th graders in the school is approximately normal, then 68% of all scores will fall within plus or minus 1 standard deviation from the mean. Virtually all scores will fall within plus or minus 3 standard deviations from the mean.

Figure 4-6 shows an entry from the *ASVAB Test Score Results Roster* for an 11th-grade woman. This student, for example, received a standard score of 60 on *Academic Ability*.



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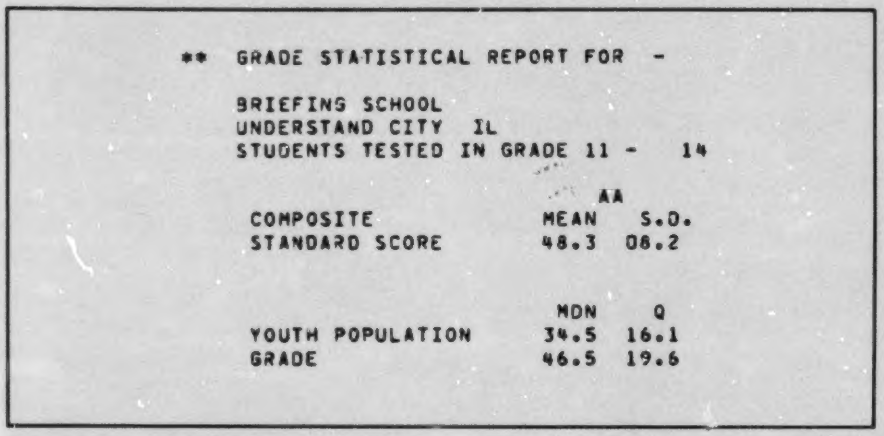
ANDERSON   GLORIA

   COMPOSITE              AA    V     M    M-C   B-C   E-E   HST

  STD SCORE               60    60    63    54    64    62    58
  YOUTH POP %ILE          84    88    87    64    96    88    77
  GRADE-SEX %ILE          93    97    92    94    99    97    94
  OPP SEX-GRADE %ILE      91    95    91    70    99    92    85
  GRADE %ILE              92    96    92    82    99    94    89
```

Figure 4-6. Sample student listing for composite scores from the *ASVAB Test Score Results Roster.*

In order to compare this student's performance on *Academic Ability* with that of other students in her grade and school who took the ASVAB during the same testing session, her counselor can refer to the grade statistical report as shown in Figure 4-7.



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          **  GRADE STATISTICAL REPORT FOR  -

              BRIEFING SCHOOL
              UNDERSTAND CITY  IL
              STUDENTS TESTED IN GRADE 11 -    14

                                         AA
               COMPOSITE            MEAN   S.D.
               STANDARD SCORE       48.3   08.2


                                     MDN     Q
               YOUTH POPULATION     34.5   16.1
               GRADE                46.5   19.6
```

Figure 4-7. Sample grade statistical report from the *ASVAB Test Score Results Roster* for *Academic Ability.*

If the counselor wants to compare this student's *Academic Ability* scores with other 11th graders using standard scores, the following procedure is followed:

1. Locate the mean standard score on the roster for *Academic Ability* for 11th graders. In this example, the score is 48.3.
2. Add and subtract the standard deviation for the composite to the mean score to establish a range. In this case, the standard deviation is 8.2, and the range, corresponding to plus and minus 1 standard deviation from the mean, is 40.1 - 56.5.
3. See where the individual student's score falls in relation to this range. Here, the student's score of 60 is more than 1 standard deviation from the mean, which shows that the student's score on *Academic Ability* is well above average compared to other 11th graders in her school.

Using this procedure, the counselor may compare all scores for this student with mean scores of 11th graders in her school or all students in her school who took the ASVAB at the same session.

To make this comparison using percentiles, the counselor first must decide which norm group is most relevant (i.e., Youth Population or grade). After selecting the norm group, the counselor can create bands for the group by adding and subtracting the semi-interquartile range provided for each median composite score. Fifty percent of all scores will lie within this range. If the student's score is above this range, the score is above 75% of the scores for 11th graders in the school. If the student's score is below this range, it is below 25% of the scores obtained by 11th graders.

Using the example provided previously in Figures 4-6 and 4-7, the student received a percentile score of 92 for her grade on *Academic Ability*. The median percentile score, by grade, for 11th graders at her school on this composite, is 46.5; the semi-interquartile range is 19.6. Fifty percent of all scores, therefore, fall within the range of 26.9-66.1. Since this student's score is above this range, her score is above 75% of the scores of others in her grade and school on *Academic Ability*.

Information on the *ASVAB Test Score Results Roster* also can be used to compare average scores for grades and for schools. If the ASVAB-14 is given annually, the reports can be used to make longitudinal comparisons from one year to another. In order to make these comparisons, ranges for mean scores, using standard deviation units, or ranges for median scores, using semi-interquartile ranges, have to be used to determine if reliable differences between scores exist. If ranges overlap substantially, the scores should be interpreted as basically equivalent. If ranges do not overlap substantially, a difference in scores should be noted. Because the norms used for ASVAB-14 differ from the norms used for ASVAB-5, results from these forms cannot be compared in this way.

Obviously, comparisons between groups that are similar have more meaning than comparisons between groups with few shared characteristics. For example, if all 11th graders in a comprehensive high school are tested in the fall, the performance of this group can be compared with the performance of (a) future groups of 11th graders attending that school who are also tested in the fall and (b) 11th graders who attend similar schools that test all students in the fall of Grade 11. Group comparisons are meaningless unless the groups are comparable.

This chapter presents basic information regarding the use of ASVAB test results for career counseling purposes. Research has shown that encouraging students to be actively involved in the interpretation process is highly desirable; therefore, this chapter concludes with examples provided to illustrate techniques for counselors to maximize student involvement and understanding in the interpretation of ASVAB results.

5

INTERPRETATION

Reporting the Results

Since test results can be confusing to students and parents, counselors play an important role in providing information to explain the results. Unlike many teachers and parents who are not trained in test interpretation, counselors are in a unique position to interpret test results, to explain the limitations of test scores, and to integrate test data with other student information. Integrating aptitude test data with other student information can facilitate self-awareness and stimulate the career exploration of students.

Supplementary materials, in the form of handouts, are provided in the back of this manual to assist the counselor in using the ASVAB for career counseling. Most of these materials are written for students, but some are appropriate for use with parents, teachers, and counselors.

Reporting Results to Students

The counselor should (a) discuss characteristics of the test, (b) explain results and significant findings (e.g., differences among scores), (c) provide students with an opportunity to examine and discuss test results as reported on the results sheet, and (d) suggest steps for career exploration in light of information from the test and other sources. Several models are presented as options for reporting ASVAB results.

Large Groups

Large groups can be used for test interpretation. The major reason for presenting test results in large groups is efficiency—reaching large numbers of people in a brief period of time. Test scores can be distributed and interpreted by a counselor, counselor/teacher team, or counselor/military team. If requested, the military will provide assistance from persons qualified to interpret ASVAB results (i.e., test specialists, education coordinators, and education specialists). The local military service representative should be contacted for further details.

An agenda for a large group interpretation of the ASVAB should include the following topics:

- explanation of what the ASVAB measures;
- distribution of the ASVAB student results sheets;
- instruction in understanding the student results sheet;
- guidelines to follow in interpreting the results;
- directions for locating information about civilian careers;
- directions for locating information about military careers; and
- scheduling of small group or individual follow-up sessions.

Audiovisual aids and student handouts are particularly useful for test interpretation sessions with large groups. Examples of student materials that can be used are presented in Handout II, "Explanation of ASVAB Results"; Handout III, "ASVAB Scores"; and Handout IV, "The Military Recruiter." Handout II is designed to be used in ASVAB group interpretation sessions to explain the students' results. Handout III illustrates sample items from each subtest by composite. Handout IV may be useful for 12th graders and postsecondary students interested in the military. Counselors also may wish to refer to Appendix E, "*Military Career Guide*," for more information about military careers.

Small Groups

Distributing test results to students in a small group provides the opportunity for more interaction. Students typically feel less inhibited about asking questions and the counselor can provide more personalized responses. A small group meeting also provides the counselor with an opportunity to encourage young people to talk about career goals among peers.

In addition to the topics covered in a large group session, the counselor may wish to discuss hypothetical cases. This strategy would (a) illustrate test interpretation, (b) demonstrate how to use ASVAB results in combination with other student information, and (c) relate ASVAB results to appropriate career exploration activities available in the school. A small group interpretation session allows student-initiated concerns and peak interest areas to surface. If the counselor conducts subsequent group meetings, students can identify problems in locating information about careers they are exploring. Membership in an ongoing group also permits the sharing of career plans. Activities, such as the ones provided in Handout V, "Know Yourself," and Handout VI, "Questions for the Future," could be completed as homework between sessions.

Individual Interviews

Counselors may elect to schedule individual interviews for all students who have taken the ASVAB, students who request an individual session, or students in need of career guidance assistance. For those who have not yet received any explanation of their ASVAB results, counselors may want to begin with an agenda similar to that suggested in the "Large Groups" section of this chapter. For students who have previously met in a group setting, the individual interview provides the opportunity for further assistance in understanding the meaning and implications of test results.

Prior to an individual interview, the counselor should study the student's test results. Such preparation will facilitate the interpretation, especially until the counselor becomes familiar with the ASVAB.

During individual interviews, the counselor should assess the student's understanding of the test results. Individual interviews may reveal that test scores do not appear to portray an accurate picture of a student's developed abilities. In these cases, additional formal testing or informal acquisition of information is recommended. Individual interviews also can be used to formulate guidelines for career exploration and planning.

Reporting Results to Parents

Many parents would like to assist their children in educational and career planning. Research consistently documents that high school students and graduates rank their parents ahead of teachers and counselors as important career-planning resources (Educational Testing Service, 1980; Florida Department of Education, 1979). To help parents in this role, some counselors conduct a group meeting or make appointments with parents of tested students to discuss ASVAB results and their implications for career development.

Some counselors invite parents to accompany students to meetings where test results are discussed. These meetings often are held in the evening to accommodate working parents. Discussion with parents can help resolve discrepancies between the student's measured ability level and student and parent expectations.

Reporting Results to Teachers

Although the ASVAB may be of particular interest to certain teachers, all teachers should be encouraged to learn about the aptitudes of students and how aptitude scores relate to career planning. Counselors have a responsibility not only to make standardized aptitude test scores available to teachers, but also to explain fully the scores to teachers if needed. Whenever possible, teacher-counselor conferences or group meetings should be scheduled to accomplish these objectives.

Guidelines

Some general guidelines for interpreting the ASVAB are provided here to serve as a frame of reference for counselors.

1. Offer students the opportunity to have their scores interpreted. Providing students with test scores is not the same as interpreting them.
2. Before beginning an interpretation session, determine the needs of the audience (e.g., students, parents). Identify the questions the audience is likely to ask (e.g., "Does this mean I should be a mechanic?").
3. Before interpreting the results, restate the purpose for which the test was administered. Remember the limits of aptitude tests. They are not absolute measures of abilities. They do provide estimates of general levels of acquired abilities.
4. Interpret clearly and simply. Define confusing terms (e.g., norms, composites) and avoid evaluative terms (e.g., weakness). Use sample test items to illustrate what was measured (use Handout III, "ASVAB Scores"). Use graphics whenever possible.
5. Clarify the difference between *academic composites* and *occupational composites* in terms of what they measure.
6. Examine the grade/sex percentile scores before looking at the other percentile scores.
7. Examine differences between composite scores to determine if any differences are significant (i.e., little overlap of error bands).

8. Explain the two highest and lowest scores.

9. Remember that there is overlap in the subtest composition of most *occupational composites* but no overlap in the subtest composition of *Verbal* and *Math* scores; consequently, there may appear to be larger differences between *Verbal* and *Math* than between other composites.

10. Explain why the Youth Population scores appear on *Your ASVAB Results*. Students interested in the military should be introduced to the *Military Career Guide*. Show the students how to use the ASVAB Occupational Composite Index in the *Military Career Guide* to identify occupations for which they may qualify for military training.

11. Interpretation based on norm group references should be modified in light of the student's age. A student's grade/sex and Youth Population scores are likely to be different because of the differences in the composition of the norm groups: The Youth Population norm group consists of women and men, ages 18 to 23, whereas the grade/sex norm group consists of individuals in the same grade and of the same sex. Consequently, Youth Population scores will usually be lower than grade/sex scores for 10th, 11th, and 12th graders.

12. Explain scores in simple terms that help students understand appropriate educational and occupational possibilities based on their aptitudes.

13. Help students link ASVAB results to occupational information. Using the back of the student results sheet, Handout VII ("Linking Your ASVAB Scores to Specific Occupations"), the *Military Career Guide*, or other resources, it may be appropriate to encourage students to develop a list of occupations that would relate to the student's abilities, interests, and work values. The counselor may need to help the student begin this assignment by suggesting several occupations to consider.

14. If students are interested in nontraditional careers, review grade/opposite-sex scores. Students do not have a copy of the grade/opposite-sex scores; however, these scores are provided on the *Counselor Summary*. Be prepared to ask students if they want to know how they compare to students of the opposite sex. When interpreting these scores to students, remind them of the concept of standard error of measurement. For example, these percentile scores give an idea of how one compares to a specific norm group but if the ASVAB was taken again, one might score several points higher or lower.

15. Remember that an aptitude test is only one tool to be used in career exploration. Integrate ASVAB data with other data—formal (e.g., interest inventories, achievement scores, grades) and informal (e.g., teacher reports). Other data are especially important for students who score at about the same level on all ASVAB composites.

16. Provide a summary at the close of the session that includes the student's educational and occupational options. This summary should synthesize the ASVAB results and integrate these findings into a picture of the individual from which tentative occupational exploration may begin.

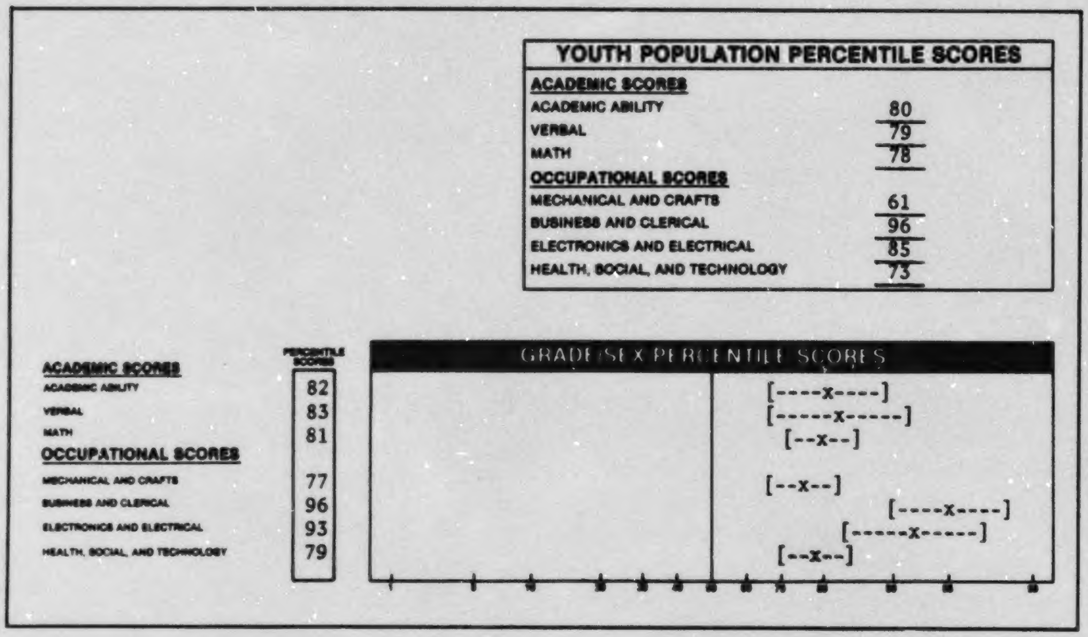
Case Studies

The case studies presented in this chapter demonstrate the interpretation of ASVAB results and the use of these results in career counseling. The cases were selected to illustrate the different career planning needs and heterogeneous ability levels of students who take the ASVAB. The cases provide counselors with examples of how to interpret ASVAB test results, but they are not models for how to do career counseling. As in all counseling scenarios, there are many options regarding what a counselor could do or say. These cases are illustrations, not "the answer" to a given situation. Other test data are included in these case studies, not as an endorsement, but merely to demonstrate the use of the ASVAB in conjunction with other tests commonly administered in schools for career counseling.

Case 1: Postsecondary Student, Christine

Christine is in her second year at a community college. She is thinking about changing schools but is hesitant because she does not really know what she wants to study or what career she would like to pursue.

The counselor at the college suggested Christine take the ASVAB and an interest inventory to determine some possible careers that she might want to explore. The results of her tests are pictured in Figures 5-1 and 5-2.



YOUTH POPULATION PERCENTILE SCORES	
ACADEMIC SCORES	
ACADEMIC ABILITY	80
VERBAL	79
MATH	78
OCCUPATIONAL SCORES	
MECHANICAL AND CRAFTS	61
BUSINESS AND CLERICAL	96
ELECTRONICS AND ELECTRICAL	85
HEALTH, SOCIAL, AND TECHNOLOGY	73

	PERCENTILE SCORES
ACADEMIC SCORES	
ACADEMIC ABILITY	82
VERBAL	83
MATH	81
OCCUPATIONAL SCORES	
MECHANICAL AND CRAFTS	77
BUSINESS AND CLERICAL	96
ELECTRONICS AND ELECTRICAL	93
HEALTH, SOCIAL, AND TECHNOLOGY	79

Figure 5-1. ASVAB student results for Christine.

General Occupational Themes

	Standard Score		Standard Score
Realistic	39	Social	40
Investigative	50	Enterprising	61
Artistic	52	Conventional	54

High Basic Interest Scales	Standard Score	3 Highest Occupational Scales	Standard Score
Law/Politics	69	Advertising Executive	59
Business Management	69	Lawyer	59
Sales	63	Army Officer	57

(Mean=50)

Figure 5-2. *Strong-Campbell Interest Inventory* results for Christine.

Counselor preparation: The counselor integrates Christine's ASVAB and *Strong-Campbell Interest Inventory* results. The counselor also tries to anticipate Christine's questions (e.g., "What major do you think I should select?").

Counselor to Christine: About a month ago you took the ASVAB and the *Strong-Campbell Interest Inventory*. The ASVAB measures your aptitudes or abilities. The *Strong-Campbell Interest Inventory* compares what you like to the interests of people in specific occupations and college majors. Here are your results sheets for both. Please take about 10 minutes to look at your scores and read everything on both sheets.

After 10 minutes: Let's discuss your ASVAB results first. The large graph compares your results to women in two-year colleges. There are seven composites on the ASVAB and their names appear to the left of the graph. Composite scores combine how you did on two or more parts of the ASVAB. This handout (give Handout III, "ASVAB Scores") shows which subtests and sample items make up each composite.

After 2 to 3 minutes: Do you understand what a composite is?

Christine to Counselor: Yes.

Counselor: Fine. The ASVAB scores are percentiles. Do you understand percentiles?

Christine: I think so. Doesn't an 80th percentile mean that I scored as well as or better than 80% of the students who took the ASVAB?

Counselor: That's right, but the large graph shows your results compared to women in an educational setting similar to yours. The other scores, labeled "Youth Population Percentile Scores," compare you to women and men. We will talk more about this other group of scores later. Remember as you read the results sheet that no test scores are exact. You should look at the band that shows where your "true score" lies.

The first 3 scores on your ASVAB are *academic composites*. These scores give an indication of your potential for further formal training. Your high level of ability in all the areas tested is very obvious. These composites include subtests in reading, math, and general science.

The next four scores are *occupational composites*. These composites measure your potential for successful performance in these general career areas. Again, compared to other women in two-year colleges, you are well above average in all areas. Your *Business & Clerical* score is the highest and your *Electronics & Electrical* score is also very high.

It might be helpful for you to compare your performance on the ASVAB to men in two-year colleges because in many of the electronics and electrical occupations, men would be your primary competitors (show column on *Counselor Summary* headed "Grade/Opposite Sex"). Compared to men in two-year colleges, your percentile scores are

Mechanical & Crafts	26
Business & Clerical	95
Electronics & Electrical	70
Health, Social, & Technology	49

Remember that these scores are estimates and not exact numbers. You can see that you also scored well, compared to men, in the same two composites, *Business & Clerical* and *Electronics & Electrical*. Your score on *Mechanical & Crafts* is considerably lower compared to men due to your relative lack of familiarity with mechanical concepts and auto and shop information. Your high school transcript indicates that you never took any shop classes. This score, therefore, undoubtedly reflects the fact that you were unfamiliar with the vocabulary and principles of mechanics. It does not mean that you could not learn about mechanics.

On the back of your ASVAB results sheet are some sample occupations for the various *occupational composites*. This handout will give you a more complete listing of occupations that relate to each *occupational composite* (give Handout VII, "Linking Your ASVAB Scores to Specific Occupations"). This may help you relate occupations to your aptitudes.

Now look at the column on your results sheet headed "Youth Population Percentile Scores," which compares your results to a sample of 18- to 23-year-old women and men. These scores are useful if you are interested in exploring the military as an option. Do you have any interest in finding out more about opportunities in the military?

Christine: No, I don't think so.

Counselor: That's fine, but if you wanted to see what the military services had to offer you, it would be easy using our computer system in the career center. There are civilian and military occupations in our system, including about 75 officer occupations for which you might qualify after graduation from a four-year college.

Now let's look at the *Strong-Campbell Interest Inventory*. The inventory does not measure your abilities; it is concerned only with your interests. Research has shown that occupations can be grouped into six general themes: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Although these divisions are rough, they do provide useful guidelines.

The interest inventory shows that you are Enterprising and somewhat Conventional. Enterprising people make good entrepreneurs. They are persuasive and tend to have strong political interests. Conventional people are methodical, clerical, and organized. The test indicates some general career fields to which your interests relate (e.g., Law/Politics, Business Management, and Sales), as well as some specific occupations where your interest patterns match those of people in the occupations (e.g., Advertising Executive, Lawyer, and Army Officer). Remember, we are talking about your interests, things you might like, not your abilities.

Your interest inventory matched your interests with those of people with at least a four-year undergraduate degree. Have you thought about any specific schools you may want to attend next year?

Christine: Not really, although I'm sure it would have to be one of our state universities because of the expense.

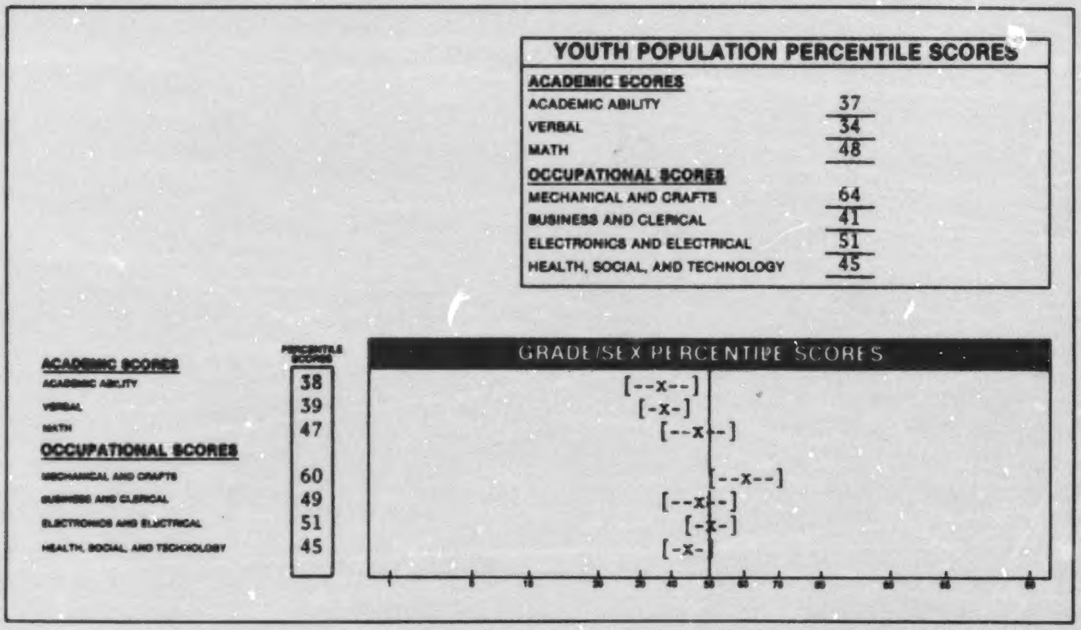
Counselor: Well, deciding on a career and a related area of study is difficult. Your aptitude test and interest inventory scores indicate that many options are open to you. Therefore, making a decision becomes even more difficult. Let's begin by selecting several occupations that most interest you at this time. Then, I suggest that you spend some time exploring these occupations by using the computer in the career center as well as the other resources there. The computer can provide you with information about other factors to consider when deciding on a career (e.g., working conditions, employment outlook, and potential earnings). After you've gathered some information on those areas you like most, make an appointment to see me and we'll go through the information together.

Case 2: Twelfth Grader, Doug

Doug attends a small high school in the suburbs of a metropolitan area. He has never expended much effort in academics, but has always passed his classes. He prefers shop classes and spends much of his free time working on cars. Doug's father is a maintenance engineer for a local medical manufacturing company. His mother is a secretary for a trucking company. Doug does not want to go to college. He is considering attending a trade school after graduation.

Doug wanted his counselor to help him to determine which occupations he should investigate and to explain what type of training is necessary to enter these occupations. Doug was willing to take tests to help find some answers. Doug's ASVAB results are presented in Figure 5-3.

Counselor preparation: The counselor reviews Doug's ASVAB results and student file prior to his appointment. The counselor pays particular attention to grades on vocational preparation courses and notes from previous counseling sessions. The counselor also attempts to formulate clear links between Doug's ASVAB results and training opportunities.



YOUTH POPULATION PERCENTILE SCORES

ACADEMIC SCORES	
ACADEMIC ABILITY	37
VERBAL	34
MATH	48
OCCUPATIONAL SCORES	
MECHANICAL AND CRAFTS	64
BUSINESS AND CLERICAL	41
ELECTRONICS AND ELECTRICAL	51
HEALTH, SOCIAL, AND TECHNOLOGY	45

GRADE/SEX PERCENTILE SCORES

	PERCENTILE SCORES
ACADEMIC SCORES	
ACADEMIC ABILITY	38
VERBAL	39
MATH	47
OCCUPATIONAL SCORES	
MECHANICAL AND CRAFTS	60
BUSINESS AND CLERICAL	49
ELECTRONICS AND ELECTRICAL	51
HEALTH, SOCIAL, AND TECHNOLOGY	45

Figure 5-3. ASVAB student results for Doug.

Counselor to Doug: About a month ago you took the ASVAB. The ASVAB measures your abilities in several different areas The scores on the ASVAB will show you whether or not you are better in a specific academic or career area. The ASVAB measures abilities you've developed and not the areas or occupations that interest you. Take about 5 minutes to look at your ASVAB scores and read the front and back of your results sheet.

After 5 minutes: Your ASVAB results are reported in percentile scores. For example, your percentile score of 60 on the *Mechanical & Crafts* composite shows that you scored as well as or better than 60 out of every 100 male students in the 12th grade nationwide who took the test. Do you understand?

Doug to Counselor: My scores only compare me to other guys who took the test?

Counselor: Yes. The scores on the large graph on your results sheet compare you with 12th-grade men. My *Counselor Summary* includes results that compare you to 12th-grade women and to all 12th graders. I will be glad to share those results with you later if you would like to see them. You also have another set of scores, labeled "Youth Population Percentile Scores," on your results sheet that compares you to a sample of 18- to 23-year-old women and men who took the ASVAB. We will talk more about these scores later.

Looking at the large graph, labeled "Grade/Sex Percentile Scores," you can see that seven composite scores are listed to the left of the graph. Composite scores combine how you did on two or more parts of the ASVAB. Take a minute to look at this handout (give Handout III, "ASVAB Scores") which shows each of the subtests and some sample items that make up each composite.

After 2-3 minutes: Do you understand what a composite is?

Doug: Yes.

Counselor: Good. Do you have any questions so far?

Doug: I never even heard some of the words on the electronics part.

Counselor: That's probably because you have not studied electricity or electronics. Therefore, you might have scored a little lower on *Electronics & Electrical* than *Mechanical & Crafts*. The ASVAB measures what you have learned so far in school and in your experiences outside of school. If you took a shop class like "Electricity," for instance, and then retook the ASVAB, your scores would probably improve. Keep in mind, as we look at each of your scores, that they tell how much ability and knowledge you demonstrated when you took the test.

When you look at your results, use the bands around each score. As the written explanation states, test scores cannot be perfectly exact. For example, if you took the ASVAB again, your *Math* score would probably not be at exactly the 47th percentile but it would probably be somewhere between the 35th and 55th percentiles, as the band indicates.

Let's look at your scores shown in the large graph. The first 3 scores are called *academic composites*. These scores give an indication of your potential for further formal education like college, technical school, or military training programs. Your scores are very similar on all of these composites. That is why the bands overlap. It appears that you can answer questions that require mathematical abilities almost as well as those that require vocabulary and reading. Are your interests about the same in both areas?

Doug: I don't read much. I guess I like math a little better.

Counselor: Well, you seem to have at least average ability in both areas. What you like is important, however.

The next four scores show how well you performed on the *occupational composites*. These composites measure your potential for performance in these general career areas. You scored highest on the *Mechanical & Crafts* composite; however, it is important to note that actually all four *occupational composites* have overlapping bands. Therefore, this test doesn't sufficiently differentiate between your aptitudes in the four areas measured by the ASVAB. We will want to look at all the other data we have in addition to the ASVAB to help you select careers to explore.

I want you to look at those other scores, for a minute, in the box labeled "Youth Population Percentile Scores." As I said before, those scores compare your performance to a sample of 18- to 23-year-old women and men. These scores are helpful if you want to explore occupational and training opportunities available in the military. Do you have any interest in the military?

Doug: No.

Counselor: That's fine. Let's look on the back of your results sheet to link your ASVAB results to specific occupations. Do you have any interest in any of the occupations listed in the four groupings?

Doug: I might like being an electrician. I wouldn't want to be a line installer—

isn't that one of those guys who climbs telephone poles?

Counselor: You're right. Are you saying that where you work is important to you?

Doug: Yes. I don't think I want to work outside like guys do on construction sites. Being an auto mechanic might be okay, too, for a while. I like to work on my own car and I've worked at a gas station, but I don't want to be an auto mechanic the rest of my life.

Counselor: There are many other similar occupations that require mechanical aptitude and similar skills as these sample occupations listed under *Electronics & Electrical*. We have several trade schools in this area with training in mechanical and electrical occupations. Our career center has information about them. Do you know anything about any of the trade schools or community colleges in the area?

Doug: No. I've only lived here for a year.

Counselor: Well, let's talk about your interests and ambitions a bit more and then I will be in a better position to suggest occupations and training programs for you to explore. You've talked quite a bit about occupations that require you to work with things and you also mentioned not wanting to be an auto mechanic the rest of your life. (Pause.)

Doug: Yes.

Counselor: Well, earlier I noticed that you have an average score on the *Math* composite even though you haven't taken a math class in 2 years. I was wondering if you'd like a job where you worked with numbers, for example, a computer operator or programmer?

Doug: Maybe. Do you need to go to college for those jobs?

Counselor: You do not need 4 years of college to be an operator or programmer; however, many persons in programming jobs do eventually earn degrees.

We've talked about several occupations that may be appropriate for your interests and abilities, but there are many more that we may have overlooked. That's why we have a computer in the career center—to help students check out a range of careers related to their interests and abilities. It's simple to use the computer to search for careers and I think it might identify some additional occupations for you to consider. Would you like to use it?

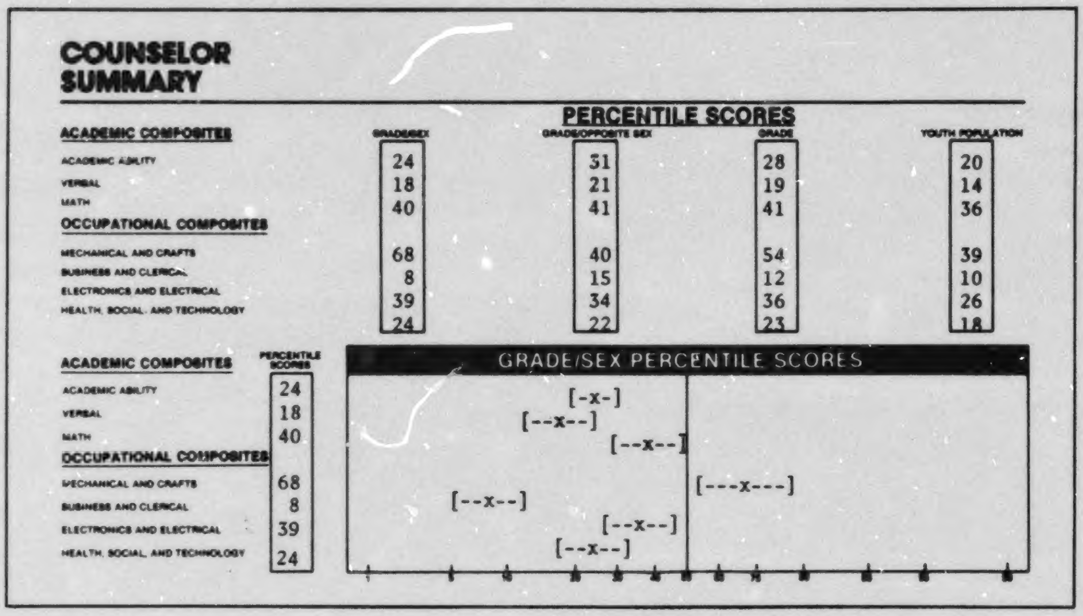
Doug: Sure. How does it work?

Counselor: First, you will begin with a student handbook which asks you questions like, "Are you interested in going to a two-year program after high school to learn a skill?" The handbook is pretty simple, but it takes about 30 or 40 minutes to complete. Why don't you fill it out this afternoon or tomorrow and then stop back to see me on Thursday. I could meet you in the career center at the beginning of your Study Hall to go over the handbook and explain a few basic steps on how to use the computer. Then you can use the computer to do a career search. It probably will take you about 20 to 30 minutes and we'll discuss those occupations it suggests next week.

Doug: Okay. I'll see you later.

Case 3: Eleventh Grader, Marsha

Marsha, a high school junior, mentioned to her counselor that she wanted to discuss her options after high school. The counselor arranged for an interview. During this interview, Marsha indicated that she doubted her ability to obtain a college degree. She told the counselor that she did not want to work in a factory like her mother, but might want to join the Army like her older sister. Marsha said she liked sports, especially softball, and enjoyed designing jewelry. Her counselor suggested Marsha take the ASVAB to obtain a clearer picture of her aptitudes and to determine some possible career areas that Marsha might want to explore. Marsha's test results are presented in Figure 5-4.



COUNSELOR SUMMARY

PERCENTILE SCORES

ACADEMIC COMPOSITES	GRADE/SEX	GRADE/OPPOSITE SEX	GRADE	YOUTH POPULATION
ACADEMIC ABILITY	24	31	28	20
VERBAL	18	21	19	14
MATH	40	41	41	36
OCCUPATIONAL COMPOSITES				
MECHANICAL AND CRAFTS	68	40	54	39
BUSINESS AND CLERICAL	8	15	12	10
ELECTRONICS AND ELECTRICAL	39	34	36	26
HEALTH, SOCIAL, AND TECHNOLOGY	24	22	23	18

ACADEMIC COMPOSITES	PERCENTILE SCORES
ACADEMIC ABILITY	24
VERBAL	18
MATH	40
OCCUPATIONAL COMPOSITES	
MECHANICAL AND CRAFTS	68
BUSINESS AND CLERICAL	8
ELECTRONICS AND ELECTRICAL	39
HEALTH, SOCIAL, AND TECHNOLOGY	24

Figure 5-4. *Counselor Summary* for Marsha.

Counselor preparation: The counselor reviews Marsha's ASVAB results and student file prior to her appointment. The counselor determines what questions Marsha most likely will ask and prepares responses. The counselor studies Marsha's scores and related information and prepares a list of career areas that Marsha might want to consider.

Counselor to Marsha: Remember that the ASVAB is an aptitude test. It is designed to measure your abilities in certain general career areas.

The ASVAB is just one tool that can help you decide what career is best for you. We also want to keep in mind other factors like your interests.

Let's spend about 10 or 15 minutes going over your ASVAB results. While I pull your permanent record, please look at your scores and read both sides of the results sheet.

After 5 minutes: Let's look at the graph of your ASVAB results. I have a copy here to look at that I'll put into your school file when we are finished. The graph shows how your scores compare to a sample of 11th-grade women across the United States who took the ASVAB.

The scores are reported in percentiles. Do you understand percentile scores?

Marsha to Counselor: I think so.

Counselor: Look at your *Mechanical & Crafts* score. You scored at the 68th percentile. That means that you scored as well as or better than 68% of 11th grade women. Remember as you read the results sheet that no test scores are exact. You should look at the band that shows where your "true score" lies. For example, you scored at the 68th percentile on *Mechanical & Crafts*. It is likely that your true score lies between the 53rd and 79th percentiles.

There are seven composite scores listed on the left of the graph. These composites come from the 10 individual subtests or parts of the ASVAB. Composite scores combine how you did on two or more parts of the ASVAB. For example, the first composite listed is *Academic Ability*. (Give student Handout III, "ASVAB Scores," and pause for student to look at subtest names and sample items.)

After 2-3 minutes: Do you understand what a composite is?

Marsha: Yes.

Counselor: Fine. The sheet I just gave you shows the subtests and some sample items that make up the composites. *Academic Ability* combines how you did on *Word Knowledge*, *Paragraph Comprehension*, and *Arithmetic Reasoning*. *Academic Ability* gives you a general indication of how you would perform in further formal education like a military training program or a technical school program after high school.

Now, looking back at your results sheet, the next two scores measure *Verbal* and *Math*. You can look at the handout I gave you for a minute to see which subtests and items are in the *Verbal* and *Math* composites. (Pause.)

Your *Academic Ability* composite score combines some of the same subtests from the *Verbal* and *Math* sections. This score is low, which suggests you would probably have a difficult time in college courses. Your highest *academic composite* is in *Math*, which is a little below average. (Average would be the 50th percentile.) The *Math* composite measures your general understanding of math and your ability to use numbers to solve problems. Your *Verbal* composite score is lower. The *Verbal* composite shows how well you did on tests measuring vocabulary, reading skills, and knowledge of information taught in science courses. Do you have any questions about your *Academic Ability*, *Verbal*, or *Math* scores?

Marsha: Not right now.

Counselor: Let's go on and look at the next four scores, which are *occupational composite* scores. Take a few minutes to look at the subtests and items that make up each of these four composites. (Pause.) *Occupational composites* measure your potential for successful performance in general career areas. For example, you scored higher than most 11th-grade women on the *Mechanical & Crafts* composite, which is an estimate of how well you would perform in this career area. Your lowest *occupational composite* was *Business & Clerical,* which provides an estimate of performance in the business and clerical career area. One of the abilities that the *Business & Clerical* composite measures is *Coding Speed. Coding Speed* is determined by how quickly and accurately you can use a key to match words with a four-digit code. There are also verbal skills in this composite.

You can see that your highest score is on *Mechanical & Crafts.* Its band does not overlap any other composite. Because you scored above average compared to other 11th-grade women, you may want to consider exploring occupations in this area (e.g., jet engine mechanic). Mechanical and crafts occupations, however, currently are predominately filled by men. In order to get an idea of how you scored compared to men who took the test, we should determine your score compared to those of 11th-grade men. This will give you a more realistic idea of your present chances for success in this area. The *Counselor Summary* of your scores that I have shows how you compare to 11th-grade men (show column marked "Grade Opposite Sex"). Your score on the *Mechanical & Crafts* composite is at the 40th percentile, which is lower than the score you got when you were being compared to women. This is not surprising, since more 11th-grade men than women have been exposed to information in this area. If you have an interest in occupations in this area, however, you can take some courses and gain knowledge in these fields. We will talk more about mechanical and crafts occupations in a few minutes.

Your second highest *occupational composite* is *Electronics & Electrical;* although your true score may not be higher than *Health, Social, & Technology* because the bands overlap. You also may wish to explore occupations in the both of these areas. Do you have any questions about your *occupational composite* scores? (Pause.)

Marsha: No, I think I understand.

Counselor: Okay, if you think of anything, please ask. Before I go on and talk about linking your ASVAB results to specific occupations, tell me, are you surprised by your results?

Marsha: Yes, a little. I didn't think I'd score so high on the mechanical part.

Counselor: Well, do you have a good feeling from doing better than you expected or are you uneasy because I said men typically score high on *Mechanical & Crafts?*

Marsha: I'm pleased I scored high but surprised.

Counselor: Fine, how about your scores on the *academic composites?*

Marsha: They didn't surprise me. They are about the same as my state competency test scores.

Counselor: Based on your grades and other standardized tests, your ASVAB results seem to confirm your particular strengths and abilities. The next big step is to help you select occupations you may want to explore. This will include finding out about further training or education you would need for specific occupations. We have information on both civilian and military information in our school's career center that you can use.

But before we do that, look at the scores in the column headed "Youth Population Percentile Scores" on your ASVAB results sheet. These scores compare your performance on the test to that of women and men aged 18-23. These scores are somewhat lower than your other scores because the people with whom you are being compared are older than you and this group includes both women and men. You can use these scores, however, with the *Military Career Guide* to estimate your chances of qualifying for training for military occupations.

Since you indicated you are thinking about joining the Army, like your sister did, you should look at the *Military Career Guide*. This book provides information about enlisted occupational and training opportunities in all branches of the military services. Here is a handout that may help you use this guide to explore military occupations (show Handout I, "Using the *Military Career Guide*"). I will show you where the guide is located and go through an example with you later when we go to the career center.

You may know from your sister being in the Army that, overall, 9% of persons in the military are women. In the past, women in the military traditionally worked in medical and administrative positions. Today, women can enlist in any occupational specialty for which they can qualify. Some combat specialties, however, are open only to men.

What type of occupations interest you?

Marsha: Well, I like to work with my hands. I am not sure I am strong enough though to do the types of jobs men usually do.

Counselor: That is a good point. You must be aware of the physical demands of an occupation but there may be mechanical-type jobs that do not require lifting heavy loads. You can find that out in the career center. If you find that the physical demands of mechanical occupations are beyond your capability, perhaps some of the occupations in the electronics and electrical area would interest you (e.g., repairing telephone or other communication systems equipment).

When it is time to prepare your schedule for next year, it will be helpful if you have a clearer idea about your plans after high school. We will probably pull your ASVAB results out of your file then and look at them again. Do you have any further questions about your ASVAB results?

Marsha: I did really badly in *Business & Clerical*, didn't I?

Counselor: That was your lowest composite. Remember, I said that *Coding Speed* is one of the abilities measured by the *Business & Clerical* composite. It is possible that your *Business & Clerical* score was so low because of the timed *Coding Speed* subtest. You may just be the type of person who does not like to rush through things. You were probably being very careful when taking that part of the test.

Marsha: Yes, I don't like to rush when I take a test.

Counselor: That is good to know. You might not want the type of job where someone will pressure you to work fast. We will keep that in mind when we talk about specific occupations you might want to explore.

Now, I'd like us to generate a tentative list of occupations for you to explore in the career center. How about any of the occupations I have mentioned or any others you have thought of as I talked?

Marsha: I would like to find out what a machinist does. I also like the sound of repairing telephones. I think I could do that.

Counselor: There are many occupations where workers repair different types of equipment. Perhaps you would also like to find out about people who are TV and audio video repairers.

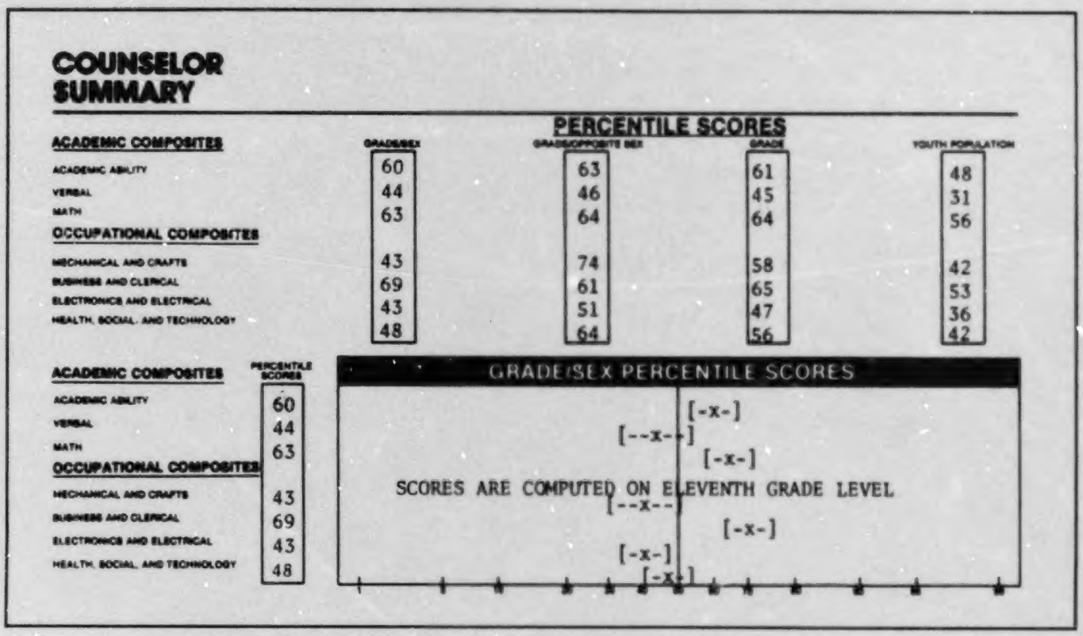
Marsha: Do they have all those occupations in the military?

Counselor: That's where the *Military Career Guide* will help you. It will tell you which service has specific occupations and again you can use your ASVAB results to determine if you are likely to qualify for training in occupations that interest you. Let's go down to the career center now and I will help you get started exploring the occupations we just mentioned.

Case 4: Tenth Grader, James

James, 16, lives in a large city with his parents and two sisters. Several of his close relatives are in the military. James has an uncle who has been in the Navy for 15 years and an older brother who is on his first tour of duty in the Marines. His mother works part-time as a nurse; his father is employed in a factory doing assembly work. James thinks he would like to go into the military after high school.

The counselor suggested that James take the ASVAB and the *Self-Directed Search* to improve his self-understanding in order to give direction to his career exploration. James's test results are presented in Figures 5-5 and 5-6.



COUNSELOR SUMMARY

PERCENTILE SCORES

	GRADE/SEX	GRADE/OPPOSITE SEX	GRADE	YOUTH POPULATION
ACADEMIC COMPOSITES				
ACADEMIC ABILITY	60	63	61	48
VERBAL	44	46	45	31
MATH	63	64	64	56
OCCUPATIONAL COMPOSITES				
MECHANICAL AND CRAFTS	43	74	58	42
BUSINESS AND CLERICAL	69	61	65	53
ELECTRONICS AND ELECTRICAL	43	51	47	36
HEALTH, SOCIAL, AND TECHNOLOGY	48	64	56	42

	PERCENTILE SCORES
ACADEMIC COMPOSITES	
ACADEMIC ABILITY	60
VERBAL	44
MATH	63
OCCUPATIONAL COMPOSITES	
MECHANICAL AND CRAFTS	43
BUSINESS AND CLERICAL	69
ELECTRONICS AND ELECTRICAL	43
HEALTH, SOCIAL, AND TECHNOLOGY	48

SCORES ARE COMPUTED ON ELEVENTH GRADE LEVEL

Figure 5-5. *Counselor Summary* for James.

Summary Code
CRE

Occupation	Education
CODE: CRE	
Electric-Motor Assembler	3
Sewing-Machine Operator	3
CODE: RCE	
Truck Driver, Light	3
Crane Operator	3
Fork-Lift Truck Operator	2
Lumber Inspector	3
Tractor Operator	3
Tractor-Trailer-Truck Driver	3

Similar Codes
CER, RCE, REC, ERC

CODE: CER	
Data Processing Worker	4
Mail Clerk	4
CODE: REC	
Supervisor, Natural-Gas Plant	4
CODE: ERC	
Postmaster	4

Figure 5-6. *Self-Directed Search* results for James.

Counselor preparation: The counselor reviews James's test results and student file prior to his appointment. The counselor pays particular attention to notes from previous counseling sessions, previous grades, and any other relevant information. The counselor tries to anticipate questions James will ask (e.g., "What occupations are best for me?").

Counselor to James: I want to spend this half hour going over the results of the ASVAB and the *Self-Directed Search* with you and talking about occupations you might want to begin to explore. Remember as we talk that the ASVAB is an aptitude test; it measures your skills or abilities. The other inventory focuses on what you like to do, your interests.

Look at the graph on your ASVAB results sheet to see how you scored. You will see a statement that tells you that 10th graders are compared to 11th graders. This is done because information is not available to compare you with other 10th graders. Because you are now being compared to 11th graders, you should expect your scores to be lower than they would be if you took the test again when you were actually in the 11th grade. Now, take about 5 minutes to look at your scores and read both sides of the results sheet.

After 5 minutes: The ASVAB has seven composite scores. The names of the composites are listed to the left of the graph on your results sheet. Composites are combinations of two or more parts of the ASVAB. This handout (give Handout III, "ASVAB Scores") shows the subtests and sample items that make up the scores in each of these areas.

After 2-3 minutes: Do you understand what a composite is?

James to Counselor: Yes.

Counselor: Good. Your ASVAB results are given in percentile scores. Do you understand what a percentile is?

James: I'm not sure. Is it the same as percent?

Counselor: Not exactly. A percentile of 69 for the *Business & Clerical* composite on the large graph would mean that you scored as well as or better than 69 out of every 100 male students in the 11th grade nationwide who took the test. That means that 31 students out of 100 scored higher than you. The actual score is marked by an "X" on the graph at 69. You can be reasonably sure, however, that your "true score" on each composite lies somewhere in the range of the band.

Your scores may improve if you retake the ASVAB as a junior or senior because then we could see how you score compared to men in your same grade. The ASVAB measures how much you know and what abilities you have already acquired. If you learn more between now and some time in the future when you retake the test, your scores will probably improve.

Let's look at your scores. The first 3 composites measure academic skills. *Academic Ability* gives an indication of your potential for further formal education after high school like college, technical school, or military training programs. Look at the handout I gave you. As you can see, it shows that this score is based on specific reading and arithmetic skills. (Pause.) Your *Math* composite is a relative strength for you. This measures your general understanding of math and your ability to use numbers to solve problems. Your *Verbal* composite score is significantly lower. The reason I say the difference is significant is because the bands do not overlap. The *Verbal* composite shows how well you did on tests measuring vocabulary, reading skills, and knowledge of information taught in science courses.

The next four scores are *occupational composite* scores. Take a few minutes to look at what subtests and items make up these four composites. (Pause.) *Occupational composites* measure your potential for successful performance in these general career areas. You scored highest on the *Business & Clerical* composite. You scored lower in the other three career areas. This would suggest that you would do better in the business and clerical career area than in the other areas listed.

Look for a minute at the other scores on your sheet labeled "Youth Population Percentile Scores." These scores are to be used with the *Military Career Guide* to provide some estimate of the likelihood of your qualifying for at least one military specialty within each of the occupations in the book. Your scores may be low because you are only 16 and the Youth Population scores are based on women and men who were 18 to 23 years old when they took the ASVAB. The *Military Career Guide* is located in the career center. Here is a handout that will help you use this guide (give Handout I, "Using the *Military Career Guide*"). I know you are considering entering the military after high school. This book is a valuable resource for you. We will go over it in more detail before we are done here. You probably will want to check it out to take home to read.

Now let's look at your personality type compared to persons in several occupations. The *Self-Directed Search* shows that you are Conventional and to a lesser degree Realistic and Enterprising. Conventional people like to work with data and details. Conventional-type people tend to prefer to work with words and numbers, carrying out detailed instructions or following a prescribed plan. They often work in offices. Realistic people prefer to work on their own using their hands and tools to build, repair, grow, or make things, often outdoors. Enterprising people like to work with people and manage them in a business sense. Does some of what I've said sound like you?

James: Well, I don't mind working with numbers and I like my typing class. I didn't do that great in shop. I like to be with people but sometimes I do better if I work alone. I don't think I'd like to have to work outside a lot if there were such cold winters like we have around here.

Counselor: That's good to know. Your ASVAB results, the *Self-Directed Search*, and your interest in your typing class would suggest you might do well in a variety of occupations, for example, computer operator or postal clerk. When exploring career areas, you also have to consider physical demands and salary range. The career center has resources to help you to find out exactly what kinds of tasks people in each of these occupations actually perform and in what types of settings they typically work.

It also is important for you to begin to think about the type of further education and training you want to pursue after graduation from high school. The occupations on the *Self-Directed Search* summary sheet are three and four education levels. This means high school and some college, technical, or business training are needed.

James: Wouldn't the military give me the training I need for a job?

Counselor: Yes. The military has very good training and educational programs as do the community colleges and vocational schools in our area. The *Military Career Guide* I mentioned before is just one reference we have in our career center that will tell you about military training programs.

I hope you will spend some time in the career center exploring some occupations suggested by your ASVAB and the *Self-Directed Search*. It would be helpful for you to look at both military and civilian opportunities. The *Military Career Guide* gives civilian counterparts or occupational titles for the civilian world that you should also study. For example, you may want to look at occupations like telecommunications operator or payroll clerk. All branches of the military need many workers in these two occupations. There are people who work in the civilian world that do the same tasks and need the same skills although their jobs may be called by a different name.

I'd like to be sure you know how to use the resources available in the career center. After you read the handout I gave you about the *Military Career Guide*, check the book out of the career center. The aide will show you where it and other materials are located. Look at lots of materials (e.g., *Occupational Outlook Handbook)* and not just the *Military Career Guide*. I'd like to talk with you about what you find and any questions you may have after your search. I also encourage you to take both these results sheets home and talk with your parents. If they have any questions, tell them to give me a call. I have a copy of your results in your school file so we can refer to them later. Do you have any questions?

James: My uncle is an officer in the Navy. Do you think I could be an officer?

Counselor: You usually need a college degree to be an officer. Do you think you want to go to college?

James: No, at least not right after high school.

Counselor: You should think about that some more. I would encourage you this year to explore as many careers and types of further education as possible. Remember, if you qualify for the military, you could go in as an enlisted man and earn a college degree while in the service, and then apply to become an officer. You also could enter the military as an enlisted man and earn educational benefits that can be used after a tour of duty. I would like to meet with you again in 2 weeks after you have spent some time talking over your test results with your parents and explored several careers.

6

QUESTIONS AND ANSWERS

1. **Why is counselor participation necessary in ASVAB testing?**

   Counselors are in the best position to know how ASVAB results can be used effectively in their schools and which students will benefit most from ASVAB testing. Counselors know the students and have the training to provide comprehensive test interpretations. Counselors, therefore, can maximize the utility of ASVAB results for students.

   The counselor's presence on the day of testing is an important factor in ensuring that the ASVAB testing process will be a positive experience for students. The participation of school personnel helps to create a familiar atmosphere and enhances the performance of students on the test. In addition, students' questions regarding the school's use of the test results can be readily answered.

2. **Is the ASVAB free of cost to the school and student?**

   Yes. The Department of Defense provides test materials, administration and scoring services, resource personnel, and reference materials at no cost to schools. There are, however, obvious indirect costs. Schools contribute the physical space where testing takes place, the staff time involved in coordinating testing activities and interpreting the results, and the educational time of students who take the test.

3. **If students take the ASVAB in school, can their scores be used if they enlist in the military?**

   Yes. Individuals who have taken the ASVAB in school may use those ASVAB results to enlist if (a) they were 11th or 12th graders or postsecondary students when they took the ASVAB and (b) they took the ASVAB within the last 2 years. Individuals' ASVAB test results greatly influence the training opportunities available to them as enlistees. Therefore, individuals considering enlistment should be advised to take the ASVAB seriously and to put forth their best effort on the test. Under certain conditions it is possible for individuals to retest at the time of enlistment.

4. **Can the ASVAB be given to 9th and 10th graders?**

   The ASVAB can be given to 10th graders but not to 9th graders. Nationally representative norms are not available for either grade. If a school elects to test 10th graders, these students will be compared to students entering the 11th grade. Suitable norms are not available for use with 9th graders.

5. **Can the ASVAB be administered in two or more testing sessions?**

   The ASVAB, like other standardized tests, should be administered uniformly across all situations. If testing cannot be accomplished satisfactorily in one session, the military service representative should be contacted.

6. **How can schools inform the parents of high school students about ASVAB testing in the school?**

   A brochure is available to explain the ASVAB to parents prior to testing. Detachable, postage-paid postcards are available for distribution to parents after testing. The postcards are part of the ASVAB results package and can be used to inform parents that their daughter or son has taken the ASVAB and that test results have been received by the school. Counselors might want to consider scheduling individual or group sessions with parents to discuss the results.

7. **Is written parental consent required for students taking the ASVAB?**

No. The ASVAB is exempt from those provisions of the Family Educational Rights and Privacy Act of 1974 (known as the Buckley Amendment) that require obtaining a parental release statement. Based on rulings by the General Counsels of both the Department of Defense and the then Department of Health, Education and Welfare, records generated by ASVAB testing do not become records of the school until the results are provided to the schools; consequently, they do not require a parental release statement.

8. **If students are tested in the spring, with which norm group will they be compared?**

Students tested in the spring will be compared to students who took the ASVAB just before entering or upon entering the same grade. For example, an 11th-grade woman taking the ASVAB in March will be compared to women who were entering 11th grade when they took the ASVAB from July to October of 1980.

9. **What is the reading level of the ASVAB?**

Estimates of reading grade level have been computed separately for test questions and directions. For test questions, the percentages of words typically encountered in materials used in various grades were calculated. These grade levels were based on information in the *The Word Frequency Book* (Carroll, Davies, & Richman, 1971). By the sixth grade, 96% of ASVAB test words typically have been encountered. In 8 of 9 subtests with verbal content, the sixth-grade percentages ranged from 95 to 100. The estimate for *Word Knowledge* questions was 83%. More than 98% of the test words have been encountered by the eighth grade, with subtest percentages ranging from 98 to 100, except for *Word Knowledge* (93%).

The reading grade level of ASVAB test directions was estimated using the Dale-Chall formula (Chall, 1958). This procedure yielded a reading level of less than sixth grade. These estimates indicate that examinees in Grades 10 and above should have very little difficulty in understanding the verbal content of the ASVAB.

10. **How does a counselor encourage a student to explore occupational alternatives when the individual already has selected an occupational goal?**

The ASVAB may help confirm whether or not the student's selection is a good match with measured ability. In addition, interests, motivation, and values should be examined. If the occupation seems appropriate, training and employment outlook also should be evaluated. Even when the student's selection seems appropriate, the student should be cautioned that it is not uncommon for people to change their initial career choice. If the selection does not seem appropriate, a counselor should probe to find out why the student has made the choice. The ASVAB may suggest occupations that meet similar needs or a counselor may need to recommend further testing, self-exploration, and/or exploration of careers.

11. **How can a counselor know if particular occupations are dominated by one sex at the present time?**

    It is difficult for any counselor to keep up-to-date with labor market demographics. Checking with the State Occupational Information Coordinating Committee (SOICC) and publications of the U.S. Department of Labor and Department of Defense will help.

12. **Is there any additional training available for school counselors in interpreting ASVAB test results?**

    A school could offer an in-service program for counselors in the interpretation of the ASVAB. For example, if a counselor or a director of guidance was knowledgeable about aptitude testing in general, such a person could serve as a valuable resource. Professional associations like the American Association for Counseling and Development also may offer workshops on the ASVAB at conventions and conferences. The military has several different types of resource people available to answer questions and work with counselors. The military service representative should be contacted for details. If counselors need additional questions answered, they can call USMEPCOM toll-free at 1-800-323-0513. In Illinois, counselors can call collect at 312-688-6908.

The annotated bibliography presented in this chapter has been prepared to assist counselors in locating technical information about the ASVAB and general information about testing, career information, career counseling, and the military services. The bibliography is organized into two sections. The first section describes materials concerning the ASVAB and the military services. The second section describes materials dealing, in a generic manner, with testing, career information, and counseling.

It is beyond the scope of this chapter to review the vast body of literature that addresses topics related to ASVAB testing. The general references included in this bibliography were selected as examples of the many useful resources that are commonly available to counselors and educators. The inclusion of these references in this bibliography is not an endorsement of these publications.

7

ANNOTATED BIBLIOGRAPHY

Military Information

American Association of School Administrators, American School Counselor Association, American Vocational Association, National Association of Secondary School Principals, National School Boards Association, Air Force Recruiting Service, Army Recruiting Command, Headquarters Marine Corps, & Navy Recruiting Command. (1984). ***Educator and recruitment activities guidelines for armed services recruiting in the nation's high schools.*** **Authors.**
The guidelines were prepared jointly and approved by the above-mentioned educational associations and the recruiting services. This document provides recommendations and expectations for school officials and military recruiters related to ASVAB testing, releasing student records, and recruiting activities in high schools. Copies are available from the participating organizations.

American School Counselor Association. (1982). School counselors and military recruitment. ***American School Counselor Association Position Statements.*** **Alexandria, VA: Author.**
The position statement provides reasonable expectations for both counselors and recruiters on issues related to the role of the military in schools, including the administration and use of the ASVAB.

Marrs, T. W. (1983). ***You and the armed forces.*** **New York: Arco.**
This publication provides an informative overview of life in the various military services for women and men considering enlistment. Among the topics presented are descriptions of occupational fields, educational and training opportunities, opportunities for advancement, pay and benefits, and enlistment options.

U.S. Department of Defense. (1982). ***Profile of American youth: 1980 nationwide administration of the Armed Services Vocational Aptitude Battery.*** **Washington, DC: Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics).**
The *Profile of American Youth* reports the vocational aptitudes of a nationally representative sample of individuals, ages 16 to 23, and the development of norms for the ASVAB based upon this sample. The *Profile* compares 1981 military accessions with the youth population. A subgroup analysis of the profile population is included.

U.S. Department of Defense. (1984). ***Military career guide: Employment and training opportunities in the military.*** **North Chicago, IL: U.S. Military Entrance Processing Command.**
The *Military Career Guide* is a reference document for enlisted occupations in all branches of the military services. Descriptions are provided for more than 130 enlisted occupations. Whenever possible, military occupations are related to their civilian counterparts. Basic facts about military life, enlistment requirements, and training opportunities also are included.

U.S. Department of Defense. (1984). ***Technical supplement to the counselor's manual for ASVAB-14.*** **North Chicago, IL: U.S. Military Entrance Processing Command.**
The *Technical Supplement* contains relevant technical research data on current

and previous versions of the ASVAB for educational researchers, statisticians, psychometricians, and other interested readers. Information concerning the development and technical properties of the present high school test, ASVAB-14, is included.

Counseling Resources

Anastasi, A. (1982). *Psychological testing* (5th ed.). New York: Macmillan.
Psychological Testing provides a general review of established tests in current use and guidelines for the interpretation of test results. Tests of general intellectual ability, tests of separate abilities, and personality tests are discussed in separate sections. Additional sections deal with the functions and technical aspects of tests.

Cronbach, L. J. (1970). *Essentials of psychological testing* (3rd ed.). New York: Harper & Row.
Essentials of Psychological Testing is a textbook which introduces concepts underlying the use of tests, and includes information on scoring, interpreting scores, and selecting appropriate tests.

Frenza, M. (1982). *Counseling women for life decisions*. Ann Arbor, MI: ERIC Counseling and Personnel Services Clearinghouse.
This publication explains theories of female and adolescent motivation and addresses such issues as multiple roles and role conflict.

Harrington, T. F., & O'Shea, H. J. (Eds.). (1984). *Guide for occupational exploration* (2nd ed.). Circle Pines, MN: American Guidance Service.
The *Guide* was developed by the U.S. Employment Service to provide information on occupational fields and occupational requirements. The *Guide* lists all occupations included in the *Dictionary of Occupational Titles (DOT)*, fourth edition, except those specifically related to the military. Occupational titles are organized according to interest areas, work groups, and subgroups. Descriptive information is provided for each work group to assist the reader in reviewing, understanding, and evaluating interests, abilities, and military work experience and relating them to pertinent fields of work.

Herr, E. L., & Cramer, S. H. (1979). *Career guidance through the life span: Systematic approaches.* Boston: Little, Brown and Company.
This text emphasizes a developmental approach to career guidance. Materials and techniques to help counselors put theories to work are identified. One chapter focuses on assessment in career guidance.

Johnson, C. (Ed.). (1983). *Microcomputers and the school counselor.* Alexandria, VA: American School Counselor Association, A Division of the American Association for Counseling and Development.
This book is designed to introduce school counselors to the use of computers as aids in career counseling. Topics ranging from selecting hardware and software to ethical considerations are discussed in nontechnical language.

Kapes, J. K., & Mastie, M. M. (Eds.). (1982). *A counselor's guide to vocational guidance instruments.* Alexandria, VA: National Vocational Guidance Asso-

ciation, A Division of the American Association for Counseling and Development.
This handbook is designed to aid practitioners in the selection of appropriate instruments for use in vocational guidance settings. Descriptions and reviews of 40 instruments are presented. Multiple aptitude batteries, interest inventories, and career development inventories are among the instruments discussed. Brief descriptions of more than 70 additional tests and inventories are presented as well. References and the American Association for Counseling and Development's policy statement on the responsibilities of users of standardized tests also are included.

Mehrens, W. A., & Lehmann, I. J. (1984). ***Measurement and evaluation in education and psychology*** **(3rd ed.). New York: Holt, Rinehart and Winston.**
This textbook is written for introductory courses in measurement and evaluation. The relationship between information gathering and educational decision making is stressed and basic principles of measurement are presented. Both standardized and classroom testing are covered.

Mitchell, A. M. (1978). ***Career development needs of 17 year olds: How to improve career development programs.*** **Alexandria, VA: National Vocational Guidance Association and the Association for Measurement and Evaluation in Guidance, Divisions of the American Association for Counseling and Development.**
The National Assessment of Educational Progress (NAEP) Career and Occupational Development (COD) assessment was administered during the 1973-74 school year to a national sample representing four age levels: 9 year olds, 13 year olds, 17 year olds, and adults. This publication provides an overview of the NAEP-COD results for 17 year olds and is intended to provide a summary of the COD results, which will help educators gain a better understanding of the current status of 17 year olds on specific career and occupational development objectives. In addition, the monograph draws implications of the COD results for career development programs and suggests types of learning experiences that might facilitate increased achievement on specific objectives.

National Occupational Information Coordinating Committee. (1984). ***Improved career decision making through labor market information*** **(4th ed.). Washington, DC: Author.**
Improved Career Decision Making (ICDM) is a training program designed for dissemination through workshops at the state level. *ICDM* provides counselors labor market and career information for use in counseling. The Employment and Training Administration of the U.S. Department of Labor and the National Occupational Information Coordinating Committee administer and coordinate the program. Training is conducted by individual states. Unit 9 focuses on competencies related to military careers and training programs.

Smith, C. K., Smith, W. S., Stroup, K. M., & Ballard, B. W. (1982). ***Broadening career options for women.*** **Ann Arbor, MI: ERIC Counseling and Personnel Services Clearinghouse.**
This monograph addresses nontraditional career planning for women, changing female employment patterns, and strategies for counseling women about

nontraditional careers. Resources concerning women and nontraditional careers also are listed.

U.S. Department of Commerce. (1980). *Standard occupational classification (SOC) manual.* Washington, DC: U.S. Government Printing Office. (GPO No. 003-005-00187-5)

Since 1977, the SOC has been the national government's occupational classification system. The *SOC Manual* presents this classification system and relates SOC groupings to the *Dictionary of Occupational Titles (DOT)* codes. The system is designed to maximize the utility of information collected by government agencies, professional and labor organizations, and private research institutes.

U.S. Department of Labor. (1977). *Dictionary of occupational titles (DOT)* (4th ed.). Washington, DC: U.S. Government Printing Office. (GPO No. 029-013-0079-9)

The *DOT* provides job titles, descriptions, and related information for 20,000 civilian and military occupations. The *Dictionary of Occupational Titles, Fourth Edition Supplement, 1982* (GPO No. 029-014-00208-9) contains titles, codes, and definitions for occupations that have emerged since the 1977 publication.

U.S. Department of Labor. (1979). *Exploring careers.* Washington, DC: U.S. Government Printing Office. (GPO No. 029-001-02224-7)

Exploring Careers is a career education resource designed primarily for junior high students. General information about the world of work is presented. Case studies are included to describe specific occupations and to emphasize the importance of affective factors in choosing a career. *Exploring Careers* is available either as a single volume of 15 chapters or as separate chapters.

U.S. Department of Labor. (1980). *A counselor's guide to occupational information.* Washington, DC: Bureau of Labor Statistics. (Bulletin No. 2042)

This publication describes occupational guidance materials available from federal government agencies.

U.S. Department of Labor. (1982). *Occupational outlook handbook* (15th ed.). Washington, DC: U.S. Government Printing Office. (GPO No. 029-001-02651-0)

The *Handbook* is written to help young people, planners of educational programs, and counselors keep abreast of current occupational and employment developments. The *Handbook* is written in nontechnical language and contains articles on new occupations, training opportunities, salary trends, career counseling, and new Bureau of Labor Statistics studies. It covers approximately 1,250 occupations, grouped according to the *Standard Occupational Classification Manual,* 1980 edition. The *Handbook* contains reference codes to the *Dictionary of Occupational Titles (DOT),* fourth edition.

U.S. Department of Labor. (1984). *Occupational outlook quarterly.* Washington, DC: Bureau of Labor Statistics.

Designed as a companion publication for use with the *Occupational Outlook Handbook,* this periodical provides updated occupational information and reports major trends in the job market.

Webb, W. E. (1984). *Status of statewide career information delivery systems, May 1984.* Washington, DC: National Occupational Information Coordinating Committee.

This document reports the status of career information delivery systems (CIDS) in 42 states and in the District of Columbia, Puerto Rico, and American Samoa. Information such as the location of the CIDS, the operating agency, delivery modes, user services, and financing is included. An appendix is included which lists, by state, the name, telephone number, and address of a CIDS contact person. Another appendix describes software packages and vendor systems commonly used.

Women's Educational Equity Communications Network. (1978). *Sex bias in testing: A review with policy recommendations.* Princeton, NJ: ERIC Clearinghouse on Tests, Measurement, and Evaluation, Educational Testing Service.

This review addresses sex bias in career interest and aptitude tests. Recommendations to test users are included.

Zunker, V. G. (1982). *Using ussessment results in career counseling.* Monterey, CA: Brooks/Cole.

This book contains information regarding the utility of test results in career counseling. Case studies illustrate the use of the ASVAB and other tests in a variety of counseling situations.

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APPENDICES

A. History of the ASVAB

Forerunners of the ASVAB date back to World War II. During World War II, each military service employed its own tests to screen recruits for eligibility and to classify and assign enlisted personnel. These tests included general measures of intellectual ability and specific aptitude measures that reflected the needs of each service.

The need for a common test for all the military began with the passage of the Selective Service Act in 1948, which mandated the development of a standard screening test for enlistment qualification. The *Army General Classification Test*, then the most widely used of the military instruments, was selected as the model for the new joint-service test. The new test, called the *Armed Forces Qualification Test* (AFQT), became operational in 1950.

Each service continued to administer a battery of aptitude tests for the initial assignment of recruits to technical schools or on-the-job training. These aptitude instruments were continuously evaluated and revised as training procedures and equipment changed.

The Air Force was the first service to test students within the high schools with the introduction of the *Airman Qualifying Examination* (AQE) in 1958. The AQE, an abbreviated version of the test then used by the Air Force to classify enlisted personnel, was designed to help recruiting efforts and to aid students in career exploration and decision making. The AQE was administered at no cost to students or schools. Shortly after the Air Force began using the AQE, the Army and Navy produced brief versions of their classification batteries that were used in high schools.

To prevent costly duplication of effort by the military and the schools, and to encourage equitable selection standards across the services, the Department of Defense, in 1966, directed all services to explore the development of a single, multipurpose military test battery for use in high schools. Objectives for this testing program included the following:

- Names and test scores of all 11th and 12th graders who were tested would be provided to military recruiters.
- An AFQT score could be derived from test scores to determine eligibility for entrance into the military.
- Test results would provide aptitude composite scores associated with success in military training programs for jobs in all services.
- Students would receive academic ability and vocational aptitude scores to assist them in career exploration and decision making.
- Schools would receive a multiple aptitude battery and supporting materials at no cost to schools or students.
- Students' interest in military careers would be stimulated through the test and associated materials.

The *Armed Services Vocational Aptitude Battery* (ASVAB) was designed to accomplish these objectives. ASVAB testing, as a joint military effort, began in 1968. Since that time, ASVAB testing has been well received by high schools throughout the United States. Presently, the ASVAB is given in about 14,000 schools. Approximately 1 million students take the ASVAB each year.

Various forms of the ASVAB have been produced. Some forms of the ASVAB have been used exclusively in schools. Other forms have been used for military qualification, placement, and research. The different forms that have been developed are identified in Table A-1.

Table A-1

ASVAB Forms by Dates Used

Years in Use	School Use	Military Use
1968-73	1	None
1973-76	2	3†
	(4 was never used)	
1976-84	5	6, 7 (until 1980)
1980-84		8, 9, 10††
1984-present	14	11, 12, 13

† The Air Force and Marine Corps were the only services to use Form 3. The Marine Corps used it only in 1975.

††ASVAB-14 is parallel to Forms 8, 9, and 10 as well as to Forms 11, 12, and 13.

B. Sample Test Items

General Science

1. An eclipse of the sun throws the shadow of the

1-A moon on the sun.
1-B moon on the earth.
1-C earth on the sun.
1-D earth on the moon.

2. Substances which hasten chemical reaction time without themselves undergoing change are called

2-A buffers.
2-B colloids.
2-C reducers.
2-D catalysts.

Arithmetic Reasoning

3. How many 36-passenger busses will it take to carry 144 people?

3-A 3
3-B 4
3-C 5
3-D 6

4. It costs $0.50 per square yard to waterproof canvas. What will it cost to waterproof a canvas truck cover that is 15′ x 24′?

4-A $ 6.67
4-B $ 18.00
4-C $ 20.00
4-D $180.00

Word Knowledge

5. The wind is variable today.

5-A mild
5-B steady
5-C shifting
5-D chilling

6. Rudiments most nearly means

6-A politics.
6-B minute details.
6-C promotion opportunities.
6-D basic methods and procedures.

Paragraph Comprehension

7. Twenty-five percent of all household burglaries can be attributed to unlocked windows or doors. Crime is the result of opportunity plus desire. To prevent crime, it is each individual's responsibility to

7-A provide the desire.
7-B provide the opportunity.
7-C prevent the desire.
7-D prevent the opportunity.

8. In certain areas water is so scarce that every attempt is made to conserve it. For instance, on one oasis in the Sahara Desert the amount of water necessary for each date palm tree has been carefully determined.

How much water is each tree given?

8-A no water at all
8-B water on alternate days
8-C exactly the amount required
8-D water only if it is healthy

Numerical Operations

9. 3 + 9 =

9-A 3
9-B 6
9-C 12
9-D 13

10. 60 ÷ 15 =

10-A 3
10-B 4
10-C 5
10-D 6

Coding Speed

KEY

bargain	8385	house	2859	owner	6227
chin	8930	knife	7150	point	4703
game	6456	music	1117	sofa	9645
		sunshine	7489		

QUESTIONS **ANSWERS**

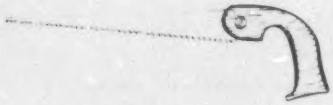
	A	B	C	D	E
11. game	6456	7150	8385	8930	9645
12. knife	1117	6456	7150	7489	8385
13. bargain	2859	6227	7489	8385	9645
14. chin	2859	4703	8385	8930	9645
15. house	1117	2859	6227	7150	7489
16. sofa	7150	7489	8385	8930	9645
17. owner	4703	6227	6456	7150	8930

	A	B	C	D	E
18. music	1117	2859	7489	8385	9645
19. knife	6227	6456	7150	7489	8485
20. sunshine	4703	6227	6456	7489	8930
21. chin	1117	2859	4703	7150	8930
22. sofa	4703	6227	7150	8485	9645
23. bargain	2859	6456	8385	8930	9645
24. point	1117	4703	6227	6456	7150

Auto & Shop Information

25. **A car uses too much oil when which parts are worn?**

25-A pistons
25-B piston rings
25-C main bearings
25-D connecting rods



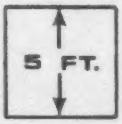
26. **The saw shown above is used mainly to cut**

26-A plywood.
26-B odd-shaped holes in wood.
26-C along the grain of the wood.
26-D across the grain of the wood.

Mathematics Knowledge

27. **If x + 6 = 7, then x is equal to**

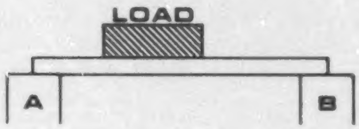
27-A 0
27-B 1
27-C -1
27-D 7/6



28. **What is the area of this square?**

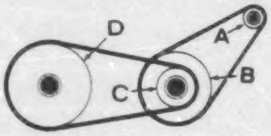
28-A 1 square foot
28-B 5 square feet
28-C 10 square feet
28-D 25 square feet

Mechanical Comprehension



29. **Which post holds up the greater part of the load?**

29-A post A
29-B post B
29-C both equal
20-D not clear



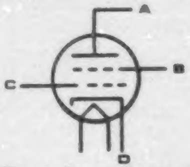
30. **In this arrangement of pulleys, which pulley turns fastest?**

30-A A
30-B B
30-C C
30-D D

Electronics Information

31. **Which of the following has the least resistance?**

31-A wood
31-B iron
31-C rubber
31-D silver



32. **In the schematic vacuum tube illustrated, the cathode is element**

32-A A
32-B B
32-C C
32-D D

Key To The Sample Test Items

1.	B	17.	B
2.	D	18.	A
3.	B	19.	C
4.	C	20.	D
5.	C	21.	E
6.	D	22.	E
7.	D	23.	C
8.	C	24.	B
9.	C	25.	B
10.	B	26.	B
11.	A	27.	B
12.	C	28.	D
13.	D	29.	A
14.	D	30.	A
15.	B	31.	D
16.	E	32.	D

C. The ASVAB and the Military

Different military institutions and resource people are involved in the ASVAB testing process. Counselors may benefit from knowing more about these institutions and resources. For example, it may be helpful to know where students go to enlist, what recruiters do, and who can help counselors interpret ASVAB scores. The purpose of this appendix is to identify key military organizations involved in ASVAB testing and to clarify the roles of military service representatives who are responsible for this process.

Institutions Involved

The military services carry out their duties as part of ASVAB testing in a number of locations outside of the school. The key locations are described below.

Recruiting Stations

The recruiting services establish stations as bases for their recruiters. Many recruiting stations house representatives of more than one service. The recruiters make contacts in high schools and the community at large. At these stations, recruiters conduct preliminary screenings and discuss the military service they represent in general terms with potential enlistees and schedule appointments for applicants with the Military Entrance Processing Stations (MEPS).

USMEPCOM

USMEPCOM is an abbreviation for the United States Military Entrance Processing Command. It is the agency assigned to administer the ASVAB both in the schools and for the services. Personnel at USMEPCOM prepare, publish, and distribute informational and promotional materials about the ASVAB. The address for USMEPCOM is

HQ USMEPCOM/MEPCT
2500 Green Bay Road
North Chicago, IL 60064

MEPS

MEPS is an abbreviation for Military Entrance Processing Station. There are 68 MEPS and three substations located throughout the United States. Individuals wishing to enlist in any of the military services are processed at the MEPS. Applicants take the ASVAB if they have not already taken it in school. They are provided information regarding occupational training areas for which they qualify and the various enlistment options available. While at the MEPS, applicants also receive a medical examination and complete the necessary enlistment forms.

Military personnel who administer the ASVAB in schools are based in the MEPS. (Civilian test administrators are employed by the U.S. Office of Personnel

Management and are based in regional offices.) In addition, personnel at the MEPS score the ASVAB and distribute the results to schools. The location of the MEPS can be obtained from the local recruiter.

Resource People

Many individuals are involved in the ASVAB test administration process from the time schools are initially contacted through the return and interpretation of students' results. Various resource people are available from the military to aid counselors in the testing process. In general, the local recruiter is the military service representative who is the first point of contact for counselors throughout this process. At times, however, counselors may be in contact with some of the other resource people. Descriptions of the primary resource people related to ASVAB testing are listed below.

Recruiters

Recruiters from each of the military services identify and screen individuals for their service. Recruiters contact prospective enlistees, including those who have been in the service and have returned to civilian life. They advise prospective enlistees about job and career opportunities in their service and perform administrative duties associated with personnel enlistment and reenlistment. As part of their duties, recruiters contact schools regarding the ASVAB and make preliminary arrangements for testing. Each service has different qualifications for personnel performing recruiting activities.

Test Specialists

Test specialists are available at 23 of the 68 MEPS around the country. Test specialists are civilian government employees with training and experience in teaching or counseling. Their duties include marketing the ASVAB and assisting recruiters and school counselors with test interpretation.

Education Coordinators and Specialists

Education coordinators and specialists are civilian government employees with training and experience as teachers or school counselors. The Army and the Navy have supplemented their recruiting forces with these individuals; the Army calls them education coordinators and the Navy calls them education specialists. These individuals act as liaisons between recruiters and local educators. They communicate with recruiters about various aspects of their area's education community, and they facilitate recruiter activities in the schools. Currently, the Army and the Navy each have more than 50 people working in this capacity. Navy education specialists are assigned to Navy Recruiting Districts. The Army assigns education coordinators to Recruiting Battalions. The Air Force and Marine Corps also employ a number of education specialists who work at the headquarters level.

Test Coordinators

Each MEPS has a test coordinator, who coordinates the scheduling of ASVAB testing in the schools. The test coordinator finalizes scheduled testing dates, determines the availability of test administrators and proctors, and ensures that the ASVAB results are returned to the school.

Test Administrators and Proctors

The ASVAB is administered by qualified test administrators from the Department of Defense or the U.S. Office of Personnel Management. Because results from the ASVAB can be used to qualify individuals for entrance into the military services, test security is important. The test administrators have direct responsibility for the security of the test booklets. School personnel are encouraged to participate as proctors. The MEPS test coordinator can provide advice to school personnel regarding the need for proctors.

Military Counselors at MEPS

Each service has a military counselor at the MEPS who discusses specific programs with young people, helps them to make decisions, and writes the contracts that guarantee job training to applicants. These counselors officially advise applicants about training that will be available and they determine if an applicant is eligible for a desired training program.

ASVAB Hotline Personnel

There is an ASVAB hotline, manned by USMEPCOM personnel, for questions that cannot be addressed by the local recruiter. The toll-free number is 1-800-323-0513. In Illinois, counselors can call collect at 312-688-6908.

D. Descriptive Statistics

Alternate-Form Reliability

An alternate-form reliability coefficient represents the correlation between results on parallel or equivalent forms of a test. The higher the coefficient, the higher the correlation between forms. The parallel ASVAB Forms 8, 9, and 10 (which also are parallel to ASVAB-14) were examined and reliability coefficients calculated for the various composites. Military service applicants took (a) parts of Form 8a and all of Form 9(a or b) or (b) parts of Form 8a and all of Form 10(a or b). The results were combined across test forms. The coefficients for students in Grades 11 and 12 are based on 5,517 service applicants, ages 16-18, who took the ASVAB forms in 1983. The coefficients for the two-year college and Youth Population groups are based on 13,772 service applicants from the full age range of service applicants who took the ASVAB in 1983.

Each service applicant did not take all of the subtests on Form 8a. As a result, data were not available from the same applicants for all of the subtests in two of the ASVAB composites: *Business & Clerical* and *Health, Social, & Technology*. The reliability coefficients for these two composites were calculated based on the formula in Wherry and Gaylord (1943), using data available on the subtest reliabilities and the intercorrelation of the subtests.

The coefficients are Pearson product-moment correlations that have been adjusted according to the standard deviation for each subsample of the Reference Population, which took Form 8a in 1980. (Subsample *ns* are presented in Table D-1.) This adjustment, based on the formula in Gulliksen (1950, p. 111), allows service applicant groups to be used to estimate reliabilities for other populations. Alternate-form reliability coefficients are presented in Table D-2.

Table D-1

Distribution of ASVAB Norm Groups by Sex

Norm Group	*n* in Norm Group		Percent of Norm Group (Weighted)
	Unweighted	Weighted	
Grade 11			
Men	680	2,133,110	51
Women	624	2,035,400	49
Total	1,304	4,168,510	100
Grade 12			
Men	642	1,814,130	51
Women	611	1,726,570	49
Total	1,253	3,540,700	100
Two-Year College			
Men	305	982,000	44
Women	437	1,259,000	56
Total	742	2,241,000	100
Youth Population			
Men	4,550	12,891,200	51
Women	4,623	12,517,900	49
Total	9,173	25,409,100	100

Note. In the national population of 16-23 year olds, 51% are men and 49% are women (U.S. Bureau of the Census, 1979).

Internal Consistency

Internal-consistency coefficients represent the degree of relationship among test items. The higher the internal consistency of a composite, the more homogeneous are the test items that comprise that composite. The internal-consistency coefficients for the ASVAB composites are based on the Kuder-Richardson Formula 20 (K-R 20) for estimating reliability. (The K-R 20 is not appropriate for use with speeded tests. Therefore, an alternate-form coefficient was used for *Coding Speed*, which is found in the *Business & Clerical* composite. This composite is the only one that includes a speeded subtest.) Data came from the subsamples of the Reference Population, which took Form 8a in 1980. (Subsample *n*s are presented in Table D-1.) Internal-consistency coefficients are presented in Table D-3.

Table D-2

Alternate-Form Reliability Coefficients for ASVAB-8, -9, and -10

Men

Composite	Grade 11	Grade 12	Two-Year College	Youth Population†
Academic Ability	.94	.93	.88	
Verbal	.94	.93	.89	
Math	.93	.93	.92	
Mechanical & Crafts	.92	.92	.91	
Business & Clerical	.94	.93	.90	
Electronics & Electrical	.94	.93	.92	
Health, Social, & Technology	.95	.94	.92	

Women

Composite	Grade 11	Grade 12	Two-Year College	Youth Population†
Academic Ability	.92	.93	.88	
Verbal	.93	.93	.89	
Math	.91	.91	.90	
Mechanical & Crafts	.84	.86	.88	
Business & Clerical	.93	.92	.90	
Electronics & Electrical	.91	.92	.90	
Health, Social, & Technology	.92	.92	.90	

Combined

Composite	Grade 11	Grade 12	Two-Year College	Youth Population
Academic Ability	.93	.93	.88	.94
Verbal	.93	.93	.89	.94
Math	.92	.92	.92	.94
Mechanical & Crafts	.89	.90	.92	.93
Business & Clerical	.94	.93	.90	.94
Electronics & Electrical	.93	.93	.92	.94
Health, Social, & Technology	.94	.93	.93	.95

†Not applicable

Table D-3

Internal-Consistency Coefficients

Men

Composite	Grade 11	Grade 12	Two-Year College	Youth Population†
Academic Ability	.95	.94	.91	
Verbal	.95	.94	.91	
Math	.95	.94	.93	
Mechanical & Crafts	.94	.94	.93	
Business & Clerical	.95	.94	.91	
Electronics & Electrical	.95	.95	.94	
Health, Social, & Technology	.95	.95	.93	

Women

Composite	Grade 11	Grade 12	Two-Year College	Youth Population†
Academic Ability	.93	.94	.92	
Verbal	.93	.93	.89	
Math	.93	.93	.92	
Mechanical & Crafts	.87	.89	.89	
Business & Clerical	.93	.93	.94	
Electronics & Electrical	.92	.93	.92	
Health, Social, & Technology	.93	.93	.92	

Combined

Composite	Grade 11	Grade 12	Two-Year College	Youth Population
Academic Ability	.94	.94	.92	.95
Verbal	.94	.94	.90	.95
Math	.94	.94	.93	.95
Mechanical & Crafts	.91	.92	.92	.93
Business & Clerical	.94	.94	.92	.95
Electronics & Electrical	.94	.95	.94	.96
Health, Social, & Technology	.94	.94	.93	.95

†Not applicable

Standard Error of Measurement

The standard error of measurement *(SEM)* represents the reasonable limits of an individual's true score given a specific obtained score. In 68% of the cases, the obtained score would not differ from the true score by more than 1 *SEM* due to errors of measurement. The *SEM* is the basis for the confidence bands on the students' results sheets. The confidence band represents an individual's composite score plus or minus 1 *SEM*, and hence should include the individual's true score in 68% of the cases.

For example:

> An 11th-grade man receives a standard score of 57 on the *Verbal* composite. The *SEM* for 11th-grade men on the *Verbal* composite is 2.5 standard score units. With information obtained in the standard score-to-percentile conversion tables in the *Technical Supplement to the Counselor's Manual for ASVAB-14 (1984)*, the individual's confidence band can be constructed.
>
> | | **Standard Score Units** | **Percentile Score** |
> |---|---|---|
> | *Verbal* Score | 57 | 84 |
> | +1 *SEM* | 59.5 | 93 |
> | -1 *SEM* | 54.5 | 76 |
>
> The confidence band for this individual's *Verbal* score would extend from the 76th percentile to the 93rd percentile. The chances are approximately 2 to 1 that the individual's true score falls in that range.

The *SEM* is related to the reliability of the test. The more reliable the test, the smaller the *SEM*, and consequently, the more precisely the test is measuring what it is designed to measure. The *SEM*, as the basis for confidence bands, provides more information for interpreting individual scores within a test than the reliability coefficient does. The *SEM* for the ASVAB composites are based on the alternate-form reliabilities presented in Table D-2, using the following formula:

$$SEM = s\sqrt{1-r_{xx}},$$

where s is the standard deviation of scores and r_{xx} is the reliability.

SEM are presented in Table D-4 in standard score units. No grade differences were found at the first decimal place for Grades 11 and 12; therefore, the two grades are combined in the table.

Table D-4

Standard Errors of Measurement

Men

Composite	Grades 11-12	Two-Year College	Youth Population†
Academic Ability	2.4	2.7	
Verbal	2.5	2.4	
Math	2.6	2.5	
Mechanical & Crafts	2.6	2.6	
Business & Clerical	2.4	2.4	
Electronics & Electrical	2.4	2.4	
Health, Social, & Technology	2.3	2.3	

Women

Composite	Grades 11-12	Two-Year College	Youth Population†
Academic Ability	2.4	2.7	
Verbal	2.4	2.4	
Math	2.7	2.7	
Mechanical & Crafts	2.8	2.5	
Business & Clerical	2.5	2.4	
Electronics & Electrical	2.5	2.5	
Health, Social, & Technology	2.5	2.3	

Combined

Composite	Grades 11-12	Two-Year College	Youth Population
Academic Ability	2.4	2.7	2.7
Verbal	2.4	2.4	2.4
Math	2.7	2.5	2.5
Mechanical & Crafts	2.9	2.7	2.7
Business & Clerical	2.3	2.4	2.4
Electronics & Electrical	2.5	2.4	2.5
Health, Social, & Technology	2.3	2.2	2.2

Note. Standard errors of measurement are in standard score units.

†Not applicable

Intercorrelations of Composites

The intercorrelations of composites are based on the subsamples of the Reference Population, which took Form 8a in 1980. (Subsample *n*s are presented in Table D-1.) There is overlap in the subtest content of the different composites, especially among the *occupational composites*. This overlap results in relatively high intercorrelations of these composites. The intercorrelations for the various subsamples are presented in Tables D-5 through D-7. The Grades 11 and 12 subsamples are treated as one group in Table D-5.

Table D-5

Intercorrelation of Composites for Grades 11-12

Men

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.93					
Math	.92	.78				
Mechanical & Crafts	.87	.83	.80			
Business & Clerical	.91	.88	.89	.78		
Electronics & Electrical	.94	.90	.93	.92	.89	
Health, Social, & Technology	.97	.91	.89	.94	.89	.94

Women

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.92					
Math	.92	.76				
Mechanical & Crafts	.89	.81	.85			
Business & Clerical	.89	.86	.87	.79		
Electronics & Electrical	.93	.88	.94	.92	.88	
Health, Social, & Technology	.07	.89	.90	.94	.87	.92

Combined

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.93					
Math	.92	.77				
Mechanical & Crafts	.82	.77	.78			
Business & Clerical	.89	.86	.87	.68		
Electronics & Electrical	.92	.88	.93	.90	.85	
Health, Social, & Technology	.96	.90	.89	.92	.84	.93

Table D-6

Intercorrelation of Composites for the Two-Year College Group

Men

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.88					
Math	.91	.73				
Mechanical & Crafts	.82	.73	.79			
Business & Clerical	.86	.80	.88	.70		
Electronics & Electrical	.92	.86	.93	.89	.85	
Health, Social, & Technology	.95	.84	.88	.94	.83	.93

Women

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.89					
Math	.91	.73				
Mechanical & Crafts	.88	.80	.84			
Business & Clerical	.85	.80	.85	.78		
Electronics & Electrical	.92	.87	.93	.91	.85	
Health, Social, & Technology	.95	.86	.89	.94	.83	.91

Combined

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.89					
Math	.91	.74				
Mechanical & Crafts	.81	.72	.79			
Business & Clerical	.85	.79	.85	.64		
Electronics & Electrical	.91	.85	.93	.90	.81	
Health, Social, & Technology	.94	.84	.89	.93	.79	.93

Table D-7

Intercorrelation of Composites for the Youth Population

Composite	AA	Verbal	Math	MC	BC	EE
Verbal	.93					
Math	.91	.78				
Mechanical & Crafts	.82	.78	.79			
Business & Clerical	.91	.88	.87	.71		
Electronics & Electrical	.92	.88	.93	.91	.86	
Health, Social, & Technology	.96	.90	.89	.93	.86	.94

E. Military Career Guide

The *Military Career Guide: Employment and Training Opportunities in the Military* is a Department of Defense publication designed as a career counseling resource for students, parents, and counselors. It provides narrative descriptions of duties, work environment, training provided, and other characteristics for more than 130 enlisted occupations.

The description of each occupation in the *Military Career Guide* contains information about comparable military occupational specialties from the Army, Navy, Air Force, Marine Corps, and Coast Guard. Because some specialties are not found in all of the services, not all services are represented in each occupation. The descriptions are necessarily general in nature. The *Military Career Guide* is intended to be an exploratory resource that covers the full range of enlisted force occupations across all services. More detailed information about the nature and availability of a military occupational specialty in a particular service can be obtained from that service's education specialists or recruiters.

Contents of the Military Career Guide

Each of the occupational descriptions in the *Military Career Guide* contains 11 sections that characterize the numerous military occupational specialties represented by that occupation. The occupations have been organized in clusters similar to the *Occupational Outlook Handbook,* published by the U.S. Department of Labor. Table E-1 provides a brief explanation and example for each of the 12 descriptive sections.

Table E-1

Contents of the Military Career Guide

Section	Example
1. Title	
Occupational descriptions in the *Military Career Guide* combine specialties available in some or all of the five services. Titles chosen for the occupations reflect this grouping and do not necessarily correspond to titles used by each service.	Heating and cooling mechanics
2. Services Represented	
This section lists the services with specialities in the occupation. Not all services are represented in every occupation.	Army, Air Force, Navy, Marine Corps, Coast Guard.

3. Background and Summary

This section describes the significance of the products or results of the work performed in the occupation. It provides a perspective about the context in which the work is performed. Typically, the last sentence in this narrative summarizes the main function(s) of the occupation.

Air conditioning and heating equipment is used to maintain comfortable temperatures in military buildings, airplanes, and ships. Refrigeration equipment is used to keep food cold and to keep some missile fuels at sub-zero storage temperatures. Heating and cooling mechanics install and repair air conditioning, refrigeration, and heating equipment.

4. What They Do

This section lists representative tasks performed by workers in particular specialties represented by the occupation.

Heating and cooling mechanics in the military perform some or all of the following duties: read and follow blueprints, circuit diagrams, and written instructions; install and repair heating plants such as furnaces and boilers; re-charge cooling systems with freon or other gases; install copper tubing systems that circulate water or cooling gases; install air ducts and floor vents; replace compressor parts on refrigerator units such as valves, pistons, bearings, and electrical motors; repair thermostats and electrical circuits.

5. Physical Demands

This paragraph describes physical requirements such as special vision, hearing, and lifting requirements.

Heating and cooling mechanics may have to lift or move heavy equipment.

6. Special Qualifications

This section describes special qualifications such as gender, typing skills, and high school courses completed.

(This section is not applicable to every occupational cluster.)

7. Helpful Attributes

Certain knowledge and skills are helpful in performing certain occupations. The school subjects and attributes listed in this section should be considered as helpful or desirable, and not required.

Helpful school subjects include science, math, and shop. Helpful attributes include: skill in using hand and power tools; interest in working on machines; interest in solving problems.

8. Work Environment

This section briefly outlines the predominant work environments. Some occupations are performed outdoors, some indoors, some on ships, and some in airplanes.

Heating and cooling mechanics may work inside repair shops. Frequently, they work wherever equipment is to be installed or repaired, sometimes in cramped spaces.

9. Training Provided

This section describes the training provided to workers entering particular military occupations. It typically includes a range for the length of training in order to account for the different specialties represented by the occupation. The major training subjects also are listed. When applicable, the last sentence notes the existence of certified apprenticeship programs. Military occupational training may prepare workers for civilian occupations requiring similar skills.

Job training consists of between 8 and 22 weeks of classroom instruction and practice in repair work. Training length varies depending on specialty. Course content typically includes: refrigeration theory; installation and repair of refrigeration and air conditioning units; installation and repair of furnaces and boilers; use of diagrams and blueprints; repair of electrical parts and circuits. Additional training is available on the job and in advanced training courses. The Army and Marine Corps offer certified apprenticeship programs in this occupation.

10. Civilian Counterparts

Almost all military specialties have one or more civilian counterparts. This section lists the kinds of organizations that typically employ civilians in similar occupations. It also highlights differences between military and civilian work when applicable, and lists common civilian titles corresponding to the military occupation. Military occupational specialties were linked to civilian occupations defined by the *Dictionary of Occupational Titles (DOT)* through extensive task analysis. When the tasks performed in the military are comparable to those of a *DOT* code and vice versa, those jobs were considered counterparts.

Civilian heating and cooling mechanics work for contractors that install home furnaces and air conditioners. They also work for firms that repair refrigerators and freezers in homes, grocery stores, factories, and warehouses. Heating and cooling mechanics in civilian life often specialize by type of equipment. They may be called heating, air conditioning, refrigeration, or climate control mechanics.

11. Opportunities

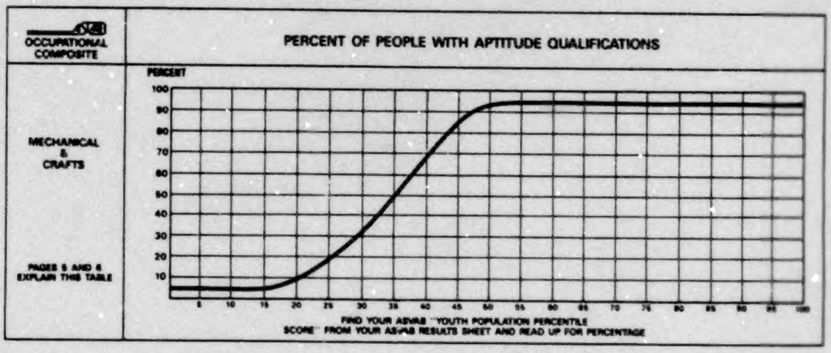
Personnel figures are based on historical data. The figures should be considered approximations, as work force needs are subject to change. Every military occupation has a defined career path. A general approximation of each occupation's career path is presented.

There are about 5,000 heating and cooling mechanics in the military. The services need about 800 new mechanics each year. After job training, heating and cooling mechanics maintain and repair equipment under supervision. With experience, they may learn to diagnose mechanical problems, and perform complicated repairs, and supervise others. Eventually, they may become maintenance or utilities superintendents.

12. ASVAB

For each occupation, a chart is presented that permits translation of a student's ASVAB-14 score into a probability that represents the student's chances of qualifying for at least one military specialty in the occupation.

SAMPLE ASVAB TABLE
FOR MILITARY CAREER GUIDE



How to Find Occupations in the Military Career Guide

Particular occupations in the *Military Career Guide* can be located through the table of contents and four indexes. Summary explanations of each of these are as follows:

1. Table of Contents

The table of contents provides a listing of more than 130 occupational titles, organized into broader clusters that parallel clusters in the *Occupational Outlook Handbook*. An example from the table of contents is provided below, for the Construction group.

		Page Number
CLUSTER:	**Construction Occupations**	
OCCUPATION:	Bricklayers and Concrete Masons	42
	Carpenters	43
	Plumbers and Pipefitters	44
	Building Electricians	45
	Paving Equipment Operators	46
	Ironworkers	47
	Well Drillers	48
	Blasting Specialists	49

The cluster headings can be used as the basis for selecting a general area of work to explore, or can be used to locate a particular occupation, such as carpenters.

2. Cluster Index of *DOT* Codes

One of the technical bases of the *Military Career Guide* is a crosscode between military occupations and civilian *DOT* occupations. The Cluster Index of *DOT* Codes lists the *DOT* codes that correspond to the military specialties represented by each of the occupations. This index is a reference that summarizes the comparability between military and civilian occupations in terms of a standard classification scheme, the *DOT*. An example of this index follows.

			Page Number
CLUSTER:	**Human Services Occupations**		14
OCCUPATION:	Caseworkers and Counselors		15
DOT CODE:	045107010	Counselor	
	195107010	Caseworker	
	195164010	Group Worker	
	195267014	Human Relations and Drug/Alcohol Counselor	
OCCUPATION:	Recreation Workers		16
DOT CODE:	195227014	Recreation Leader	
OCCUPATION:	Religious Workers		17
DOT CODE:	129107018	Director of Religious Activities	

CLUSTER:	**Electronic & Electrical Equipment Repair Occupations**	
OCCUPATION:	Radar and Sonar Equipment Repairers	77
DOT CODE:	823261018 Radio Mechanic	
	823281010 Avionics Technician	
	828281010 Electronics Mechanic	
OCCUPATION:	Radio Equipment Repairers	78
DOT CODE:	720281010 Radio Repairer	
	822281010 Automatic Equipment Technician	
	823261018 Radio Mechanic	
	823281010 Avionics Technician	
	823281014 Electrician, Radio	
	823281018 Meteorological-Equipment Repairer	
	828281010 Electronics Mechanic	
OCCUPATION:	Electronic Weapons Systems Repairers	79
DOT CODE:	806281030 Inspector, Missile	
	823281010 Avionics Technician	
	828281010 Electronics Mechanic	
	828281018 Missile Facilities Repairer	

3. *DOT* Code Index

The *DOT* code index lists in numerical order those codes that correspond to military specialties represented by more than 130 occupations in the *Military Career Guide*. An example of the *DOT* code index follows.

***DOT* Code**	***DOT* Title**	**Page Number**
822281010	Automatic-Equipment Technician	53, 56
822281014	Central-Office Repairer	62
822281022	Private-Branch-Exchange Repairer	62
822361010	Cable Tester	63

4. ASVAB Occupational Composite Index

This index is organized into four sections, one for each ASVAB *occupational composite*. Under each *occupational composite* is a listing of all the occupations that correlate highly with that particular composite. This is the same composite that appears on the ASVAB probability chart for the individual occupations in the *Military Career Guide*.

		Page Number
ASVAB COMPOSITE:	*Mechanical & Crafts*	
OCCUPATION:	Heating and Cooling Mechanics	43
	Welders	47
ASVAB COMPOSITE:	*Business & Clerical*	
OCCUPATION:	Court Reporters	14
	Computer Operators	17

ASVAB COMPOSITE:	*Electronics & Electrical*	
OCCUPATION:	Data Processing Equipment Repairers	78
	Electronic Instrument Repairers	71
ASVAB COMPOSITE:	*Health, Social, & Technology*	
OCCUPATION:	Dental Specialists	98
	Drafters	107

5. Career Guide Title Index

At the back of the *Military Career Guide* is an alphabetical listing of approximately 400 titles. These include the titles of *Military Career Guide* occupations along with alternate titles used in the civilian sector to describe corresponding occupations. This index is useful when a specific title is known but the relevant occupational title is not. An example of the alphabetical title index is as follows:

Title	**Page Number**
Accounting Specialists	7
Administrative Support Specialists	46
Audiovisual Production Specialists	34
Automobile Mechanics	94

The materials that follow are provided as resources for the student or counselor to use with the ASVAB. Most of these materials are written for students, but some are appropriate for use by counselors, teachers, and/or parents. These materials are suggested counseling aids that may be appropriate for use in different schools. A counselor can elect to use any or all of these materials. These materials may be used as handouts or overhead transparencies; they can also be modified to meet the needs of individual students.

HANDOUTS

ASVAB

Handout I
Using the Military Career Guide

WHAT IS THE *MILITARY CAREER GUIDE*?

The *Military Career Guide* was designed to be used by students and parents for career exploration purposes. The *Military Career Guide* describes the enlisted occupations available in the Army, Navy, Air Force, Marine Corps, and Coast Guard. The book may be useful in exploring occupations even if you are not sure you want to enlist in the military. The *Military Career Guide* provides a description of more than 130 different military occupations. General information is provided on subjects such as enlistment requirements, military life, and training opportunities. There is an introductory section for each service (Army, Navy, Air Force, Marine Corps, and Coast Guard) that details enlistment, training, advancement, and educational programs.

WHAT CAN I LEARN ABOUT DIFFERENT OCCUPATIONS IN THE MILITARY FROM THE *MILITARY CAREER GUIDE*?

There are many different occupational specialties that are filled by enlisted persons in the military services. The *Military Career Guide* organizes these specialties into more than 130 enlisted occupations. For each of these occupations the following information is provided:

Military Occupational Information

- Work performed
- Environmental conditions
- Physical demands
- Restrictions based on sex
- Special qualification requirements
- Aptitude requirements
- Services offering the occupation
- Occupational outlook information

Military Training Information

- Length of training
- Summary of training content
- Indication of any services offering a Department of Labor-certified apprenticeship program

Civilian Information

- Representative civilian occupational counterparts

HOW CAN I USE MY ASVAB RESULTS WITH THE *MILITARY CAREER GUIDE*?

Special ASVAB scores entitled "Youth Population Percentile Scores" are listed on your *ASVAB Results Sheet*. They are provided to you for use with the *Military Career Guide*.

For each of the more than 130 occupations discussed in the *Military Career Guide*, there is a probability chart that can help you use your "Youth Population Percentile Scores" to estimate your chances of qualifying for at least one military specialty within that occupation in the military. The *Military Career Guide* contains specific instructions on how to use your ASVAB results for this purpose.

HOW CAN I USE THE *MILITARY CAREER GUIDE* WITH OTHER CAREER INFORMATION RESOURCES IN MY SCHOOL?

The book is organized according to the same general categories used in the *Occupational Outlook Handbook*. In addition, there is a *Dictionary of Occupational Titles (DOT)* index in the *Military Career Guide*. This allows you to look up occupations in the military according to *DOT* information, such as worker actions, the purpose of these actions, and machines, tools, equipment, or work aids used. These features make the book also compatible with the *Guide for Occupational Exploration* and several other publications available in the career resource center or library.

HEATING AND COOLING MECHANICS

Army Air Force
Navy Marine Corps
Coast Guard

Air conditioning and heating equipment is used to maintain comfortable temperatures in military buildings, airplanes, and ships. Refrigeration equipment is used to keep food cold and to keep some missile fuels at sub-zero storage temperatures. Heating and cooling mechanics install and repair air conditioning, refrigeration, and heating equipment.

What They Do

Heating and cooling mechanics in the military perform some or all of the following duties:

- Read and follow blueprints, circuit diagrams, and written instructions
- Install and repair heating plants such as furnaces and boilers
- Re-charge cooling systems with freon or other gases
- Install copper tubing systems that circulate water or cooling gases
- Install air ducts and floor vents
- Replace compressor parts on refrigerator units such as valves, pistons, bearings, and electrical motors
- Repair thermostats and electrical circuits

Physical Demands

Heating and cooling mechanics may have to lift or move heavy equipment.

Helpful Attributes

Helpful school subjects include science, math, and shop. Helpful attributes include:

- Skill in using hand and power tools
- Interest in working on machines
- Interest in solving problems.

Civilian Counterparts

Civilian heating and cooling mechanics work for contractors that install home furnaces and air conditioners. They also work for firms that repair refrigerators and freezers in homes, grocery stores, factories, and warehouses. Heating and cooling mechanics in civilian life often specialize by type of equipment. They may be called heating, air conditioning, refrigeration, or climate control mechanics.

Work Environment

Heating and cooling mechanics may work inside repair shops. Frequently, they work wherever equipment is to be installed or repaired, sometimes in cramped spaces.

Training Provided

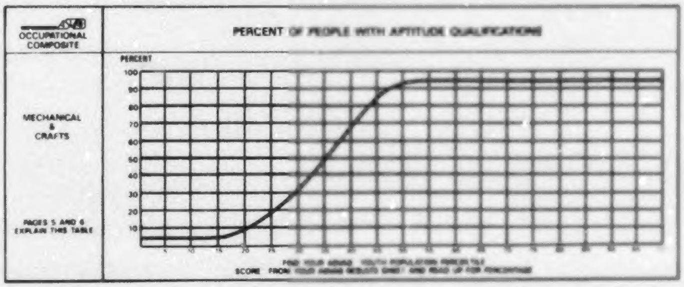
Job training consists of between 8 and 22 weeks of classroom instruction and practice in repair work. Training length varies depending on specialty. Course content typically includes:

- Refrigeration theory
- Installation and repair of refrigeration and air conditioning units
- Installation and repair of furnaces and boilers
- Use of diagrams and blueprints
- Repair of electrical parts and circuits

Additional training is available on the job and in advanced training courses. The Army and Marine Corps offer certified apprenticeship programs in this occupation.

Opportunities

There are about 5,000 heating and cooling mechanics in the military. The services need about 800 new mechanics each year. After job training, heating and cooling mechanics maintain and repair equipment under supervision. With experience, they may learn to diagnose mechanical problems, and perform complicated repairs, and supervise others. Eventually, they may become maintenance or utilities superintendents.



Sample Page from the *Military Career Guide*

BEST COPY AVAILABLE

ASVAB

Handout II
Explanation of ASVAB Results

A. *Academic Scores* estimate your potential for further formal education and predict performance in general areas requiring verbal and mathematical skills.

B. *Occupational Scores* estimate your potential for successful performance in four general career areas.

C. The numbers that tell how you did in each area are in the column marked "Percentile Scores."

D. These same numbers are plotted in the graph labeled "Grade/Sex Percentile Scores." The percentile scores in this graph tell how you rank in each area in comparison with students of your own grade and sex.

If your percentile in an area is 60, you scored as well as or better than 60 out of 100 students who took the ASVAB. If you scored in the 30th percentile, this means about 70% of the group did better than you in the area.

E. This is a pictorial representation of your scores on the ASVAB-14.

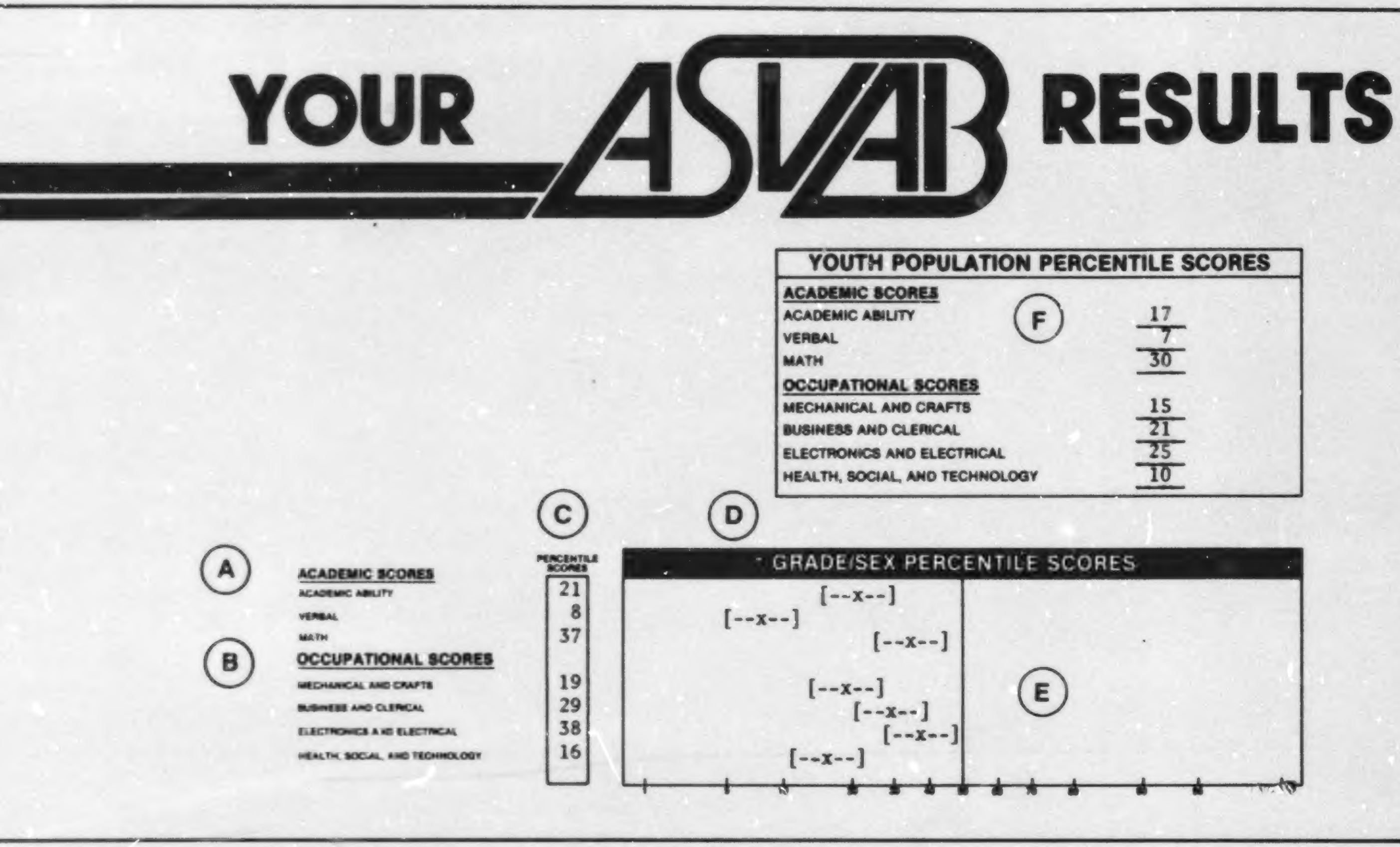
No test scores are perfectly accurate. You should not place too much importance on small differences between the percentiles in various areas. The bands show the more important differences.

The actual percentile scores earned are marked by an X on the graph. The dashes form bands that indicate the line along which the "true scores" probably lie.

Look at the bands for any two areas to see if their ends overlap. If they do not, then the differences are important. For example, *Math* is higher than *Verbal*. The bands for *Mechanical & Crafts* and *Business & Clerical* overlap, and therefore, a real difference may not exist.

F. The other column of scores, titled "Youth Population Percentile Scores," tells how you did on each composite in comparison to a nationally representative sample of young women and men, ages 18 through 23. These scores enable you to determine whether you qualify for at least one military specialty within more than 130 occupations in the *Military Career Guide: Employment and Training Opportunities in the Military*. If you want to explore training and career options in the military, you should ask a counselor or the person working in the career center for further help.

A counselor also can tell you how your scores compared to students of the opposite sex and to all students in your grade. Depending on what occupations you are interested in exploring, these other scores may provide you with additional useful information.



YOUR ASVAB RESULTS

YOUTH POPULATION PERCENTILE SCORES	F
ACADEMIC SCORES	
ACADEMIC ABILITY	17
VERBAL	7
MATH	30
OCCUPATIONAL SCORES	
MECHANICAL AND CRAFTS	15
BUSINESS AND CLERICAL	21
ELECTRONICS AND ELECTRICAL	25
HEALTH, SOCIAL, AND TECHNOLOGY	10

A / B	C PERCENTILE SCORES	D GRADE/SEX PERCENTILE SCORES
ACADEMIC SCORES		
ACADEMIC ABILITY	21	[--x--]
VERBAL	8	[--x--]
MATH	37	[--x--]
OCCUPATIONAL SCORES		
MECHANICAL AND CRAFTS	19	[--x--]
BUSINESS AND CLERICAL	29	[--x--]
ELECTRONICS AND ELECTRICAL	38	[--x--]
HEALTH, SOCIAL, AND TECHNOLOGY	16	[--x--]

mple Student Results

ASVAB Handout III
ASVAB Scores

The scores a student receives on the ASVAB are combinations of results on two or more parts of the ASVAB. This handout explains what each score measures and illustrates the types of items that contribute to each score.

ACADEMIC ABILITY

Academic Ability is a general indicator of verbal and mathematical abilities.

ACADEMIC ABILITY = [WORD KNOWLEDGE + PARAGRAPH COMPREHENSION]* + ARITHEMETIC REASONING

1. The accountant **discovered** an error.
   - 1-A found
   - 1-B entered
   - 1-C searched
   - 1-D enlarged

2. **Inform** most nearly means
   - 2-A ask.
   - 2-B turn.
   - 2-C tell.
   - 2-D ignore.

5. A person buys a sandwich for 50¢, soda for 25¢, and pie for 40¢. What is the total cost?
   - 5-A $1.00
   - 5-B $1.05
   - 5-C $1.15
   - 5-D $1.25

6. How many 36-passenger busses will it take to carry 144 people?
   - 6-A 3
   - 6-B 4
   - 6-C 5
   - 6-D 6

3. In certain areas water is so scarce that every attempt is made to conserve it. For instance, on one oasis in the Sahara Desert the amount of water necessary for each date palm tree has been carefully determined.

   How much water is each tree given?
   - 3-A no water at all
   - 3-B water on alternate days
   - 3-C exactly the amount required
   - 3-D water only if it is healthy

4. From a building designer's standpoint, three things that make a home livable are the client, the building site, and the amount of money the client has to spend.

   According to the passage, to make a home livable
   - 4-A it can be built on any piece of land.
   - 4-B the design must fit the designer's income.
   - 4-C the design must fit the owner's income and site.
   - 4-D the prospective piece of land makes little difference.

*Scores of subtests in brackets are combined and weighted as one unit.

Key to the Sample
Test Items

1 - A   4 - C
2 - C   5 - C
3 - C   6 - B

VERBAL

Verbal measures performance on questions requiring vocabulary, reading skills, and knowledge of high school science.

VERBAL = WORD KNOWLEDGE + PARAGRAPH COMPREHENSION + GENERAL SCIENCE

1. The wind is **variable** today.

   1-A mild
   1-B steady
   1-C shifting
   1-D chilling

2. **Cease** most nearly means

   2-A stop.
   2-B start.
   2-C change.
   2-D continue.

5. An eclipse of the sun throws the shadow of the

   5-A moon on the sun.
   5-B moon on the earth.
   5-C earth on the sun.
   5-D earth on the moon.

6. Substances which hasten chemical reaction time without themselves undergoing change are called

   6-A buffers.
   6-B colloids.
   6-C reducers.
   6-D catalysts.

3. Twenty-five percent of all household burglaries can be attributed to unlocked windows or doors. Crime is the result of opportunity plus desire. To prevent crime, it is each individual's responsibility to

   3-A provide the desire.
   3-B provide the opportunity.
   3-C prevent the desire.
   3-D prevent the opportunity.

4. From a building designer's standpoint, three things that make a home livable are the client, the building site, and the amount of money the client has to spend.

   According to the passage, to make a home livable

   4-A it can be built on any piece of land.
   4-B the design must fit the designer's income.
   4-C the design must fit the owner's income and site.
   4-D the prospective piece of land makes little difference.

Key to the Sample
Test Items

1 - C
2 - A
3 - D

4 - C
5 - B
6 - D

MATH

Math measures ability to use mathematical principles and arithmetic skills to solve problems.

MATH = ARITHMETIC REASONING + MATHEMATICS KNOWLEDGE

1. It costs $0.50 per square yard to waterproof canvas. What will it cost to waterproof a canvas truck cover that is 15' x 24'?

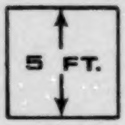
1-A $ 6.67
1-B $ 18.00
1-C $ 20.00
1-D $180.00

2. A pole 24 feet high has a shadow 8 feet long. A nearby pole is 72 feet high. How long is its shadow?

2-A 16 feet
2-B 24 feet
2-C 32 feet
2-D 56 feet

3. If x + 6 = 7, then x is equal to

3-A 0
3-B 1
3-C -1
3-D 7/6



4. What is the area of this square?

4-A 1 square foot
4-B 5 square feet
4-C 10 square feet
4-D 25 square feet

Key to the Sample
Test Items

1 - C
2 - B
3 - B
4 - D

MECHANICAL & CRAFTS

Mechanical & Crafts measures arithmetic skills; understanding of mechanical principles; information concerning automobiles, shop terminology, and practices; and electricity and electronics. This score is an estimate of potential for successful performance in the mechanical and crafts career area.

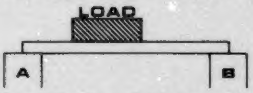
MECHANICAL & CRAFTS = ARITHMETIC REASONING + MECHANICAL COMPREHENSION + AUTO & SHOP INFORMATION + ELECTRONICS INFORMATION

1. How many 36-passenger busses will it take to carry 144 people?

1-A 3
1-B 4
1-C 5
1-D 6

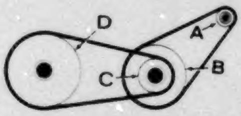
2. It costs $0.50 per square yard to waterproof canvas. What will it cost to waterproof a canvas truck cover that is 15′ x 24′?

2-A $ 6.67
2-B $ 18.00
2-C $ 20.00
2-D $180.00



3. Which post holds up the greater part of the load?

3-A post A
3-B post B
3-C both equal
3-D not clear

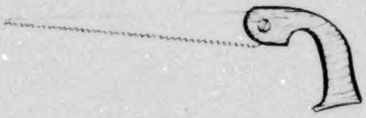


4. In this arrangement of pulleys, which pulley turns fastest?

4-A A
4-B B
4-C C
4-D D

5. A car uses too much oil when which parts are worn?

5-A pistons
5-B piston rings
5-C main bearings
5-D connecting rods

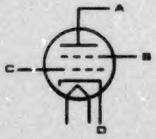


6. The saw shown above is used mainly to cut

6-A plywood.
6-B odd-shaped holes in wood.
6-C along the grain of the wood.
6-D across the grain of the wood.

7. Which of the following has the least resistance?

7-A wood
7-B iron
7-C rubber
7-D silver



8. In the vacuum tube schematic illustration, the cathode is element

8-A A
8-B B
8-C C
8-D D

Key to the Sample
Test Items

1 - B
2 - C
3 - A
4 - A

5 - B
6 - B
7 - D
8 - D

BUSINESS & CLERICAL

Business & Clerical measures vocabulary, reading, coding, and mathematical skills. This score is an estimate of potential for successful performance in the business and clerical career area.

BUSINESS & CLERICAL = [WORD KNOWLEDGE + PARAGRAPH COMPREHENSION]* + CODING SPEED + MATHEMATICS KNOWLEDGE

1. The wind is **variable** today.

   1-A mild
   1-B steady
   1-C shifting
   1-D chilling

2. **Impair** most nearly means

   2-A direct.
   2-B weaken.
   2-C improve.
   2-D stimulate.

3. Twenty-five percent of all household burglaries can be attributed to unlocked windows or doors. Crime is the result of opportunity plus desire. To prevent crime, it is each individual's responsibility to

   3-A provide the desire.
   3-B provide the opportunity.
   3-C prevent the desire.
   3-D prevent the opportunity.

4. In certain areas water is so scarce that every attempt is made to conserve it. For instance, on one oasis in the Sahara Desert the amount of water necessary for each date palm tree has been carefully determined.

   How much water is each tree given?

   4-A no water at all
   4-B water on alternate days
   4-C exactly the amount required
   4-D water only if it is healthy

KEY

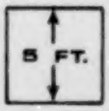
bargain	8385	house	2859	owner	6227
chin	8930	knife	7150	point	4703
game	6456	music	1117	sofa	9645
		sunshine	7489		

QUESTIONS	ANSWERS				
	A	B	C	D	E
5. game	6456	7150	8385	8930	9645
6. knife	1117	6456	7150	7489	8385
7. bargain	2859	6227	7489	8385	9645
8. chin	2859	4703	8385	8930	9645
9. house	1117	2859	6227	7150	7489
10. sofa	7150	7489	8385	8930	9645
11. owner	4703	6227	6456	7150	8930

12. If x + 6 = 7, then x is equal to

   12-A 0
   12-B 1
   12-C -1
   12-D 7/6

13. What is the area of this square?



   13-A 1 square foot
   13-B 5 square feet
   13-C 10 square feet
   13-D 25 square feet

Key to the Sample Test Items

1 - C
2 - B
3 - D
4 - C
5 - A
6 - C
7 - D
8 - D
9 - B
10 - E
11 - B
12 - B
13 - D

*Scores of subtests in brackets are combined and weighted as one unit.

ELECTRONICS & ELECTRICAL

Electronics & Electrical measures ability to solve problems requiring knowledge of mathematics, electricity and electronics, and science. This score is an estimate of potential for successful performance in the electronics and electrical career area.

ELECTRONICS & ELECTRICAL = ARITHMETIC REASONING + MATHEMATICS KNOWLEDGE + ELECTRONICS INFORMATION + GENERAL SCIENCE

1. A person buys a sandwich for 50¢, soda for 25¢, and pie for 40¢. What is the total cost?

1-A $1.00
1-B $1.05
1-C $1.15
1-D $1.25

2. How many 36-passenger busses will it take to carry 144 people?

2-A 3
2-B 4
2-C 5
2-D 6

3. If 50% of X = 66, then X =

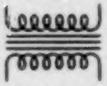
3-A 33
3-B 66
3-C 99
3-D 132

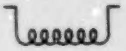
4. If you multiply $x + 3$ by $2x + 5$, how many x's will there be in the product?

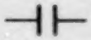
4-A 3
4-B 6
4-C 9
4-D 11

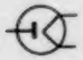
5. The safest way to run an extension cord to a lamp is

5-A under a rug.
5-B under a sofa.
5-C behind a sofa.
5-D along a baseboard.

A


B


C


D


6. Which of the above is the symbol for a transformer?

6-A A
6-B B
6-C C
6-D D

7. The chief nutrient in lean meat is

7-A fat.
7-B starch.
7-C protein.
7-D carbohydrates.

Key to the Sample Test Items

1 - C	5 - D
2 - B	6 - A
3 - D	7 - C
4 - D	

HEALTH, SOCIAL, & TECHNOLOGY

Health, Social, & Technology measures the ability to answer questions requiring vocabulary, reading, arithmetic reasoning, and mechanical reasoning skills. This score is an estimate of potential for successful performance in the health, social, and technology career area. This career area includes occupations such as air traffic controller, medical technician, and police officer.

HEALTH, SOCIAL, & TECHNOLOGY = [WORD KNOWLEDGE + PARAGRAPH COMPREHENSION]* + ARITHMETIC REASONING + MECHANICAL COMPREHENSION

1. **Small** most nearly means

1-A cheap.
1-B round.
1-C sturdy.
1-D little

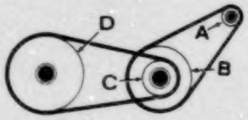
2. The accountant **discovered** an error.

2-A found
2-B entered
2-C searched
2-D enlarged

3. From a building designer's standpoint, three things that make a home livable are the client, the building site, and the amount of money the client has to spend.

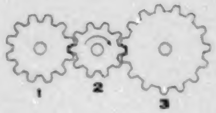
According to the passage, to make a home livable

3-A it can be built on any piece of land.
3-B the design must fit the designer's income.
3-C the design must fit the owner's income and site.
3-D the prospective piece of land makes little difference.



4. In this arrangement of pulleys, which pulley turns fastest?

4-A A
4-B B
4-C C
4-D D



5. Which of the other gears is moving in the same direction as gear 2?

5-A gear 1
5-B gear 3
5-C both of the other gears
5-D neither of the other gears

6. How many 36-passenger busses will it take to carry 144 people?

6-A 3
6-B 4
6-C 5
6-D 6

7. It costs $0.50 per square yard to waterproof canvas. What will it cost to waterproof a canvas truck cover that is 15' x 24'?

7-A $ 6.67
7-B $ 18.00
7-C $ 20.00
7-D $180.00

Key to the Sample Test Items

1 - D
2 - A
3 - C
4 - A
5 - D
6 - B
7 - C

*Scores of subtests in brackets are combined and weighted as one unit.

ASVAB

Handout IV
The Military Recruiter

WHAT DO MILITARY RECRUITERS DO?

Recruiters work for a particular branch of the military services: the Army, Navy, Air Force, Marine Corps, or Coast Guard. It is the job of recruiters to identify and screen individuals for their service. In addition, recruiters advise people who are thinking about joining the military.

WHAT CAN MILITARY RECRUITERS DO FOR ME?

Recruiters can provide up-to-date information on life in their branch of the military services. Recruiters *can* answer questions about

- whether or not your ASVAB scores meet the mental ability qualification for their branch;
- the training programs for which you might qualify;
- job-related requirements (such as special security clearances), training provided, benefits, and opportunities for promotion;
- lifestyles;
- educational opportunities; and
- enlistment options.

Recruiters *cannot*

- guarantee that you will get into a particular training program. A military counselor at the local Military Entrance Processing Station (MEPS) can do that, provided you meet all qualifications and that training is available.
- determine whether life in the military services is for you. You are in the best position to do that. Your school counselor and your family probably can help you as you sort through information and make decisions.

WHAT SHOULD I DO IF I WANT TO TALK TO A MILITARY RECRUITER?

- Call a recruiter and make an appointment.
- You might want to ask your school counselor to arrange for you to meet with a recruiter at school.
- Before your appointment, review the "Questions for the Future" handout. Check those questions that you want to ask. You also might want to write some questions of your own.

WHAT SHOULD I DO IF I AM NOT SATISFIED WITH A RECRUITER?

- You can go to another recruiter from the same branch of the service or from another military service.

WHAT IF I DECIDE THAT I AM NOT INTERESTED IN JOINING ANY OF THE MILITARY SERVICES?

- You can tell the recruiter that you are not interested in joining at this time.
- Keep your options open. You may change your plans in the future.

ASVAB Handout V
Know Yourself

You need to know a lot about yourself before you can decide what type of career may be best for you. It is important that you consider many types of information. Your ASVAB results tell you about some of your aptitudes. Interests, achievement scores, grades in subject areas, values, and your personal motivation also are important.

IDENTIFY YOUR INTERESTS

1. Have you taken an interest inventory? ____________________

   If yes, what did you learn?

   What occupations/areas were suggested?

   If no, ask your counselor how you might take one.

2. What occupations do you think would be interesting for you?

IDENTIFY YOUR ACHIEVEMENTS

3. For the last 2-3 years, list the subjects in which you got the best grades:

4. List the subjects you like best:

5. What are the subjects that you like best and in which you also receive the best grades?

6. In which subjects haven't you done so well?

7. What things are you good at that you do outside of school (for example, repair a car, sing in a choral group, sew, play soccer)?

8. Have you taken achievement tests? If yes, in what areas were your highest scores?

What were your lowest scores?

If no, ask your counselor if an achievement test might help you to understand your academic strengths and weaknesses more completely.

9. What was your highest *Academic Score* on the ASVAB?

10. What were your two highest *Occupational Scores* on the ASVAB?

11. Do your ASVAB results tell you something about yourself? If so, what?

12. How do your ASVAB results fit in with the other things that you know about yourself?

LOOK INTO THE FUTURE

13. What would you like to be doing in 5 years?

14. What would you like to be doing in 10 years?

THINK ABOUT YOUR INTERESTS, ABILITIES, AND GOALS AND HOW THEY ALL RELATE TO YOUR CAREER CHOICES

15. With your counselor's help, make a list of careers that would be appropriate for you to explore.

16. What other information do you need to consider before you decide on a career?

ASVAB

Handout VI
Questions for the Future

One of the most important decisions you may make is deciding what you will do after you graduate from high school. You may have several options. You may decide to attend a postsecondary school, work at a temporary or permanent job, join the military, or go to school part-time while you work in the private, public, or military sector. Interviewing, or meeting formally, with a representative from these sectors is a good way to obtain information about these options.

This handout is designed to help you prepare for interviews and obtain information from interviews that will assist you in deciding among different options. Section A will help in preparing for an interview. Section B is a list of sample questions to ask representatives of postsecondary schools or training institutions that you may wish to attend. Section C is a list of sample questions for representatives of prospective employers.

If you are considering entering the military services, questions from both Sections B and C may be useful because a decision to join the military involves both training and occupational opportunities. Training and occupational opportunities differ in each service. You may wish, therefore, to address your questions to representatives of different branches of the military services.

A. PREPARING FOR THE INTERVIEW

1. Plan in advance

- Read the sample questions on this handout.
- Write down any additional questions you may have.
- Share your questions with your family, friends, teachers, and others whose input you value for ideas about additional information you may want to collect.
- Decide exactly what you want to know and which questions you will ask to obtain this information.

Unless you review your questions and decide which questions to ask before your interview, you may not obtain information of importance to you during the interview.

2. Be realistic

The person you meet with may not be able to answer all your questions. Many questions cannot be answered with certainty, and answers to other questions may depend entirely on your performance in school or at work.

3. Make a good impression

- Be punctual
- Be well groomed
- Be courteous

B. SAMPLE QUESTIONS FOR REPRESENTATIVES OF POSTSECONDARY SCHOOLS AND TRAINING INSTITUTIONS

1. Will I be able to enter the educational or training program of my choice?

____

____

____

2. What will I have to invest in terms of time and money to complete this program?

3. What types of jobs have recent graduates obtained?

4. How many job openings are available annually nationwide? How many openings are expected in the next 5 years?

5. Where are most of these jobs located?

6. How many openings are expected in the geographic area where I prefer to work?

7. After I complete this program, what are my chances of finding a job where I can use the skills I have learned?

8. What kind of assistance can I expect from this school in finding a job?

9. How much money can I expect to earn on a job related to this program?

10. Additional questions I want to ask:

____

____

____

____

____

____

C. QUESTIONS FOR REPRESENTATIVES OF EMPLOYERS

1. What jobs are available?

____

____

____

2. What actual job tasks are involved in this occupation?

____

____

____

3. How many openings does this company have in this occupation every year? Are the numbers increasing, decreasing, or remaining constant?

____

____

____

4. Has high technology affected this occupational area? If yes, how? How will technological advances affect this area in the future?

____

____

____

5. If my work is good, what are the prospects for promotions and long-term employment?

____

____

____

6. Will I need more education or special training to progress in this occupational area?

____

____

____

7. Do you provide training that would enable me to advance and obtain a higher level position?

8. What is the starting salary?

9. What types of benefits (health insurance, opportunities for further education, or retirement plans) do you offer?

10. What hours will I be expected to work?

11. Will this job require me to move?

12. What type of supervision can I expect to receive?

13. Additional questions I want to ask:

Handout VII

Linking Your ASVAB Scores to Specific Occupations

The *occupational scores* on the ASVAB relate to general career areas: *Mechanical & Crafts*, *Business & Clerical*, *Electronics & Electrical*, and *Health, Social, & Technology*. Within these areas are occupations that require different levels of abilities and training. The diagrams on the following pages give examples of various occupations you might want to investigate, depending on your specific *occupational scores* and your interests. The diagrams are provided to help you to relate your ASVAB results to occupations. There are a variety of civilian and military occupational titles given for each of the four career areas.

One way to begin exploring possible occupations is to find your highest *occupational scores*. Then, look at the diagrams on the following pages and make a list of occupations you wish to explore further. You may wish to increase your knowledge of the requirements, projected job openings, salary, opportunities for advancement, and career paths for each occupation you are considering.

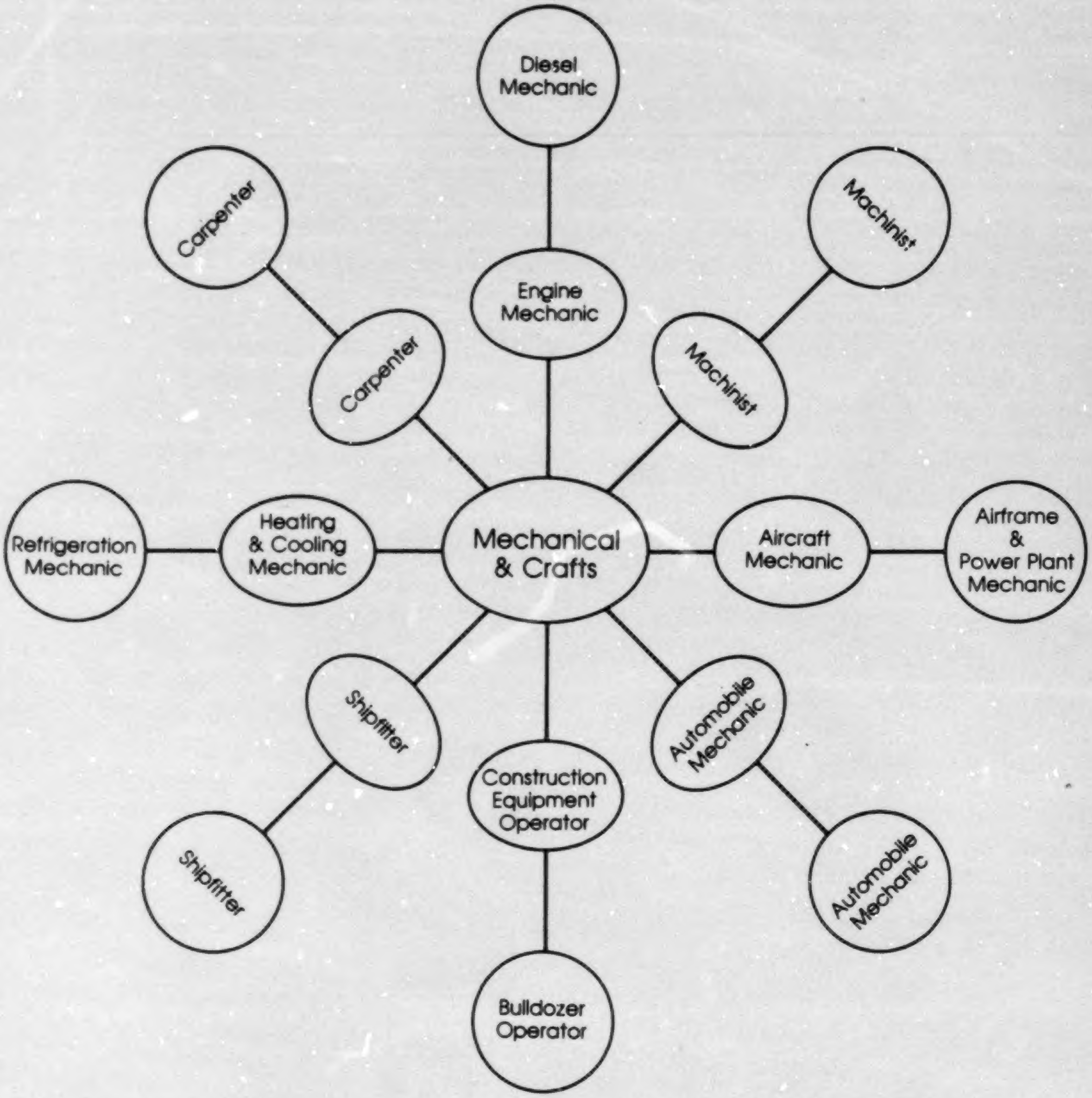
The career center contains a variety of resources for you to use to learn more about the careers you are exploring. For example, the career center has kits, printed materials, films, filmstrips, and cassettes. A career aide/librarian is available to help you find what you need. Public libraries also have resources if our school does not have what you need.

Remember, the occupations identified on the following diagrams are simply given as a starting point. They are designed to provide you with examples of types of occupations that are related to the ASVAB *occupational scores*. There are many other occupations that are not listed. Also, remember that ASVAB scores do not relate to all career areas. ASVAB scores, for example, will not help you learn about your abilities for occupations in music and the performing arts.

Keep an open mind and learn as much as you can about the world of work before making career decisions. In today's world, it is very likely that you will have many jobs during your lifetime. Now is the time to expand your knowledge of the world of work.

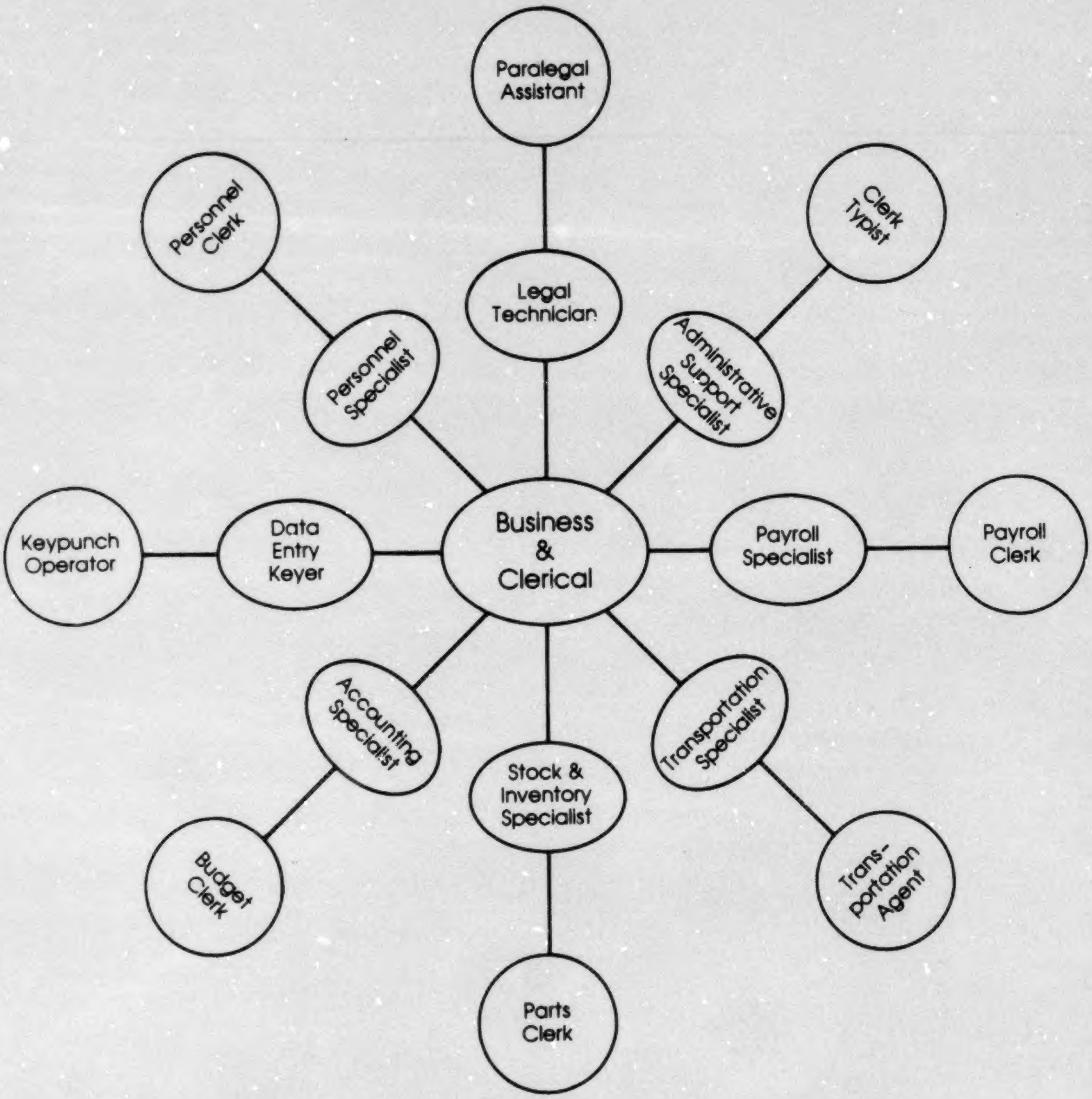
MECHANICAL & CRAFTS

This figure relates occupations to the *Mechanical & Crafts score* on the ASVAB. The inner circle consists of military occupational titles. The outer circle consists of related civilian occupational titles.



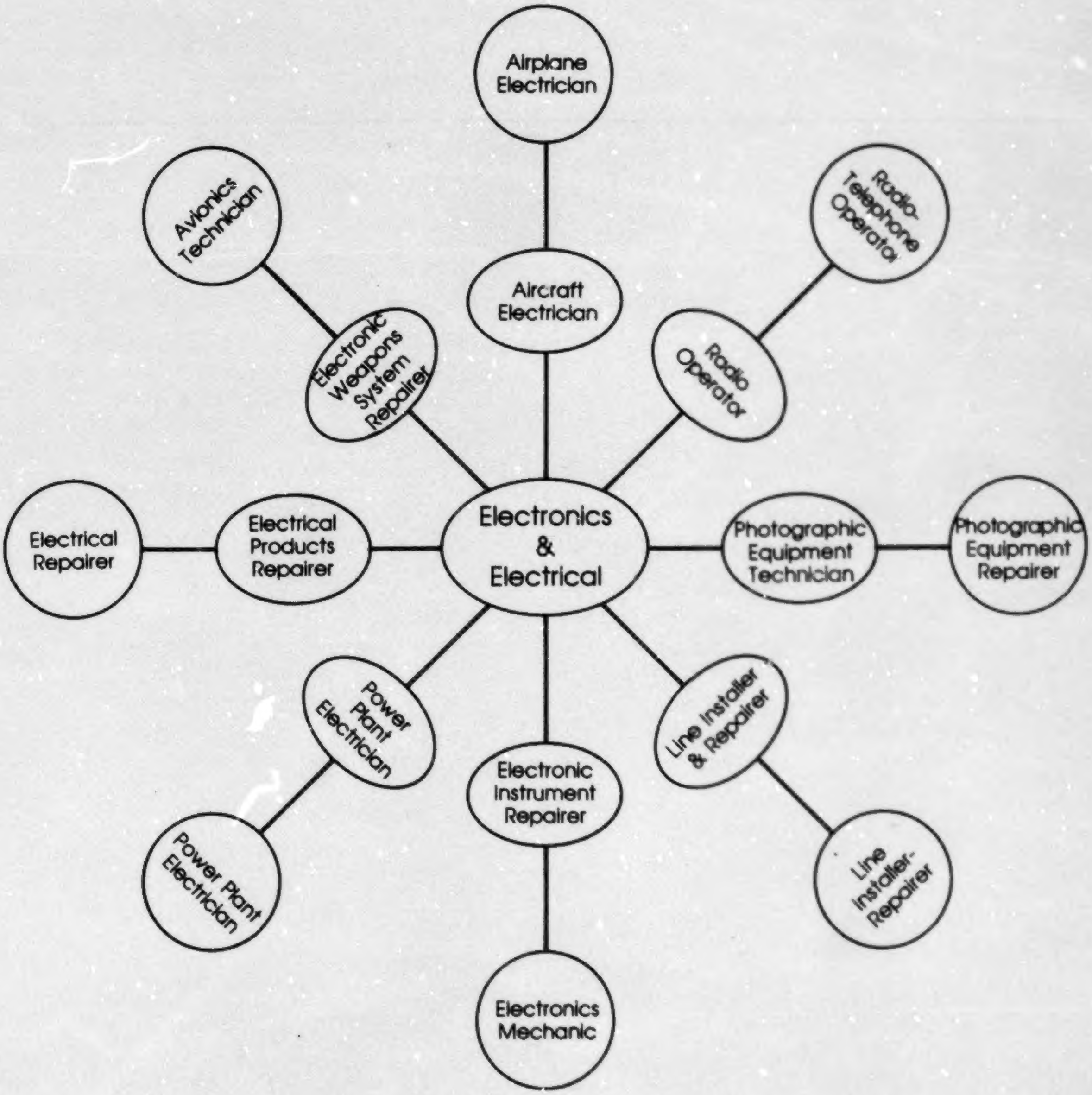
BUSINESS & CLERICAL

This figure relates occupations to the *Business & Clerical score* on the ASVAB. The inner circle consists of military occupational titles. The outer circle consists of related civilian occupational titles.



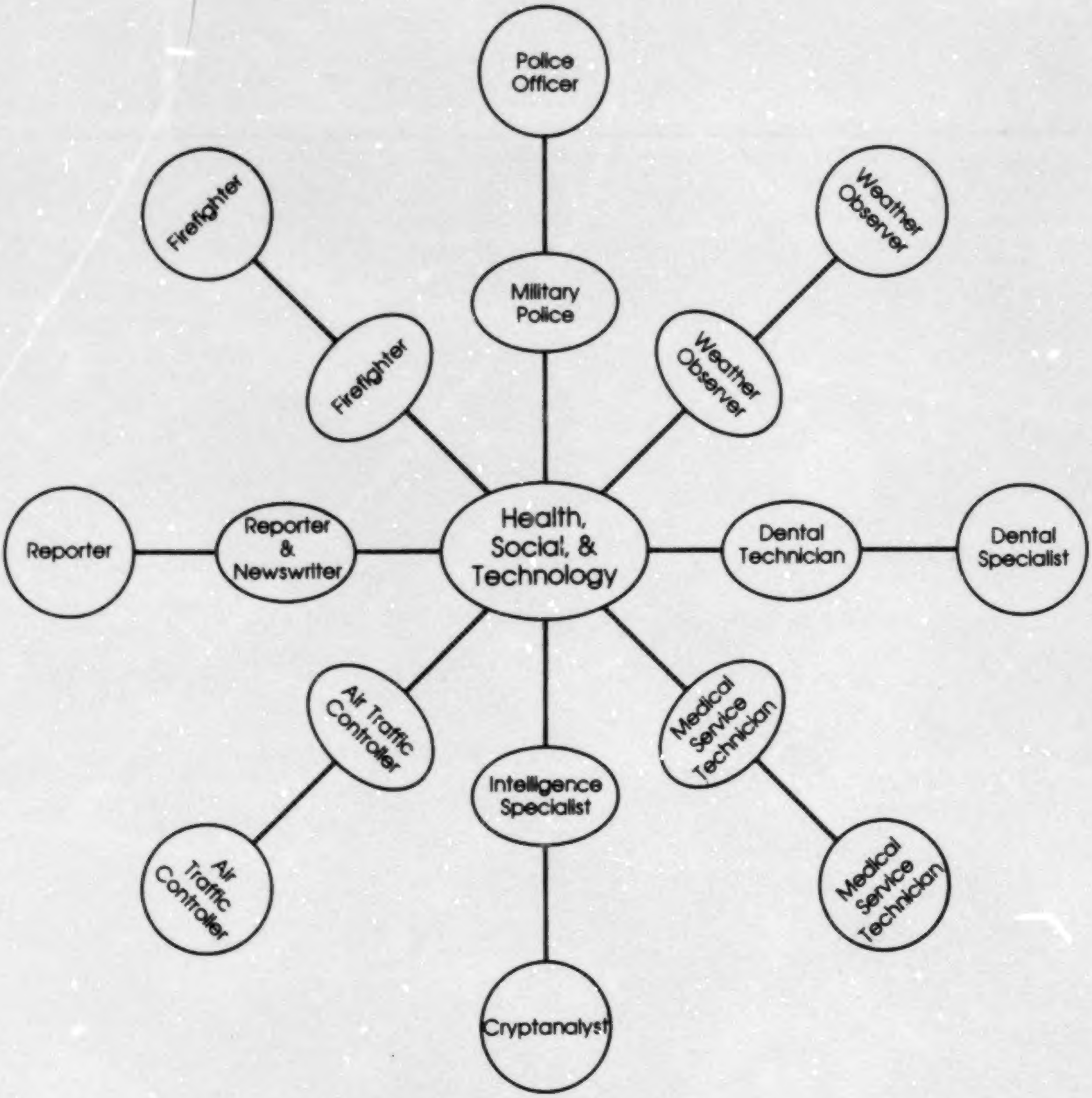
ELECTRONICS & ELECTRICAL

This figure relates occupations to the *Electronics & Electrical score* on the ASVAB. The inner circle consists of military occupational titles. The outer circle consists of related civilian occupational titles.



HEALTH, SOCIAL, & TECHNOLOGY

This figure relates occupations to the *Health, Social, & Technology score* on the ASVAB. The inner circle consists of military occupational titles. The outer circle consists of related civilian occupational titles.



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